DEPARTMENT OF INDUSTRIES

BOMBAY PRESIDENCY

ANNUAL REPORT

1931-32

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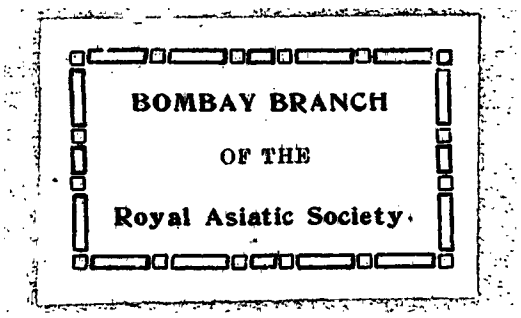

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OFFICE OF THE DIRECTOR OF INDUSTRIES,
OLD CUSTOM HOUSE,
Bombay, 31st May 1932.

From

P. B. ADVANI, ESQ., M.SC. TECH, M.I.E., J.P.,
Director of Industries,
Bombay;

To

THE SECRETARY TO GOVERNMENT,
General Department,
Bombay.

Subject.—Annual Report of the Department of Industries, 1931-32.

Sir,

I have the honour to submit the Annual Report of the Department of Industries for the year 1931-32.

I have the honour to be,
Sir,
Your most obedient servant,

P. B. ADVANI,
Director of Industries.

Annual Report of the Department of Industries, Bombay Presidency, for the year 1931-32

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CHAPTER I

GENERAL INDUSTRIAL OUTLOOK DURING THE YEAR

The commercial and industrial depression mentioned in the opening paragraph of last year's report continued and became more acute. India's trade along with that of other countries declined further below the low level of the previous year. The commodity prices continued to decline, until towards the end of the year 1931 when consequent on Great Britain going off the Gold Standard and on the decision to maintain the Indian currency standard on a sterling basis at one rupee equal to 1sh. 6d. the rupee prices of Indian commodities improved to some extent. The prices were still, however, considerably below those obtaining 3 years back. The purchasing power of the agriculturists, therefore, continued to be very restricted during the year. This state of things which was due to world causes was further aggravated so far as India is concerned by the local political conditions.

STATE OF SOME OF THE MORE IMPORTANT EXISTING INDUSTRIES

2. **Cotton Textile Industry.**—Cotton Industry in this Presidency has been in recent years passing through trying times. This specially applies to the mills in the Island of Bombay. So far as the year under review is concerned, out of 41 Bombay Island mills, annual reports of which have been received in this office up to the time of writing, no less than 27 showed a loss in working, the total loss being some Rs. 42 lakhs. 5 mills made a profit of about Rs. 5·1 lakhs. In addition to this, 9 made a profit but it was absorbed in the debit balance of the past year.

In Sholapur 4 mills showed a profit of Rs. 6·55 lakhs and in Khandesh 1 mill showed a profit of Rs. 0·6 lakhs.

The annual reports of most of the Ahmedabad mills will not be available till later in the year. It is, therefore, not possible to give any figures for them. It is reported, however, that during the year 1930 the Ahmedabad mills did not fare well. According to the Vice-President of the Millowners' Association, Ahmedabad, 61 mills with a block capital of Rs. 15·35 crores made a profit of Rs. 48·38 lakhs. Some of the mills also showed a loss of Rs. 20·45 lakhs during this period. If this loss is deducted from the net profits of the other mills, then the net profits would be reduced to Rs. 28 lakhs. It is also stated that some mills have found it difficult even to earn as much as interest on the block amount invested.

If the Bombay and Ahmedabad loss and profit figures given above are compared with those given in paragraph 2 of the last year's report of this Department, it will be noted that in the year under report Bombay Mills on the whole did better than in the previous year, the total loss figure being considerably less than in the previous year. Ahmedabad on the other hand fared in 1930 worse than in 1929 as the total profits made were reduced considerably.

During the year under report a special surcharge of 25 per cent. on all existing rates of import duties was levied by the Government of India for revenue purposes. The duty on piecegoods has been during the last two years increased as shown in the following statement :—

	British	Non-British
January 1930	.. 15 per cent. ad valorem or 3½ as. per lb., whichever is higher.	20 per cent. ad valorem or 3½ as. per lb., whichever is higher.
January 1931	.. 20 per cent. ad valorem or 3½ as. per lb., whichever is higher.	25 per cent. ad valorem or 3½ as. per lb., whichever is higher.
January 1932	.. 25 per cent. ad valorem or 4⅜ as. per lb., whichever is higher.	31¼ per cent. ad valorem or 4⅜ as. per lb., whichever is higher.

So far, machinery and raw cotton etc. used in the Cotton Textile Mills were allowed to be imported duty-free. During the year under report a duty of 10 per cent. ad valorem was imposed on Textile Machinery etc. and half an anna per lb. was levied on imported raw cotton. These duties will to some extent reduce the advantage of the increased import duties on piecegoods.

The following statistical tables covering cotton mills in the Bombay Presidency will be of interest :—

For year ending 31st August	Number of mills	Number of spindles	Number of looms	Average number of hands employed daily	Cotton consumed	Paid-up capital
					Cwts.	Rs.
1930 ..	220	6,172,792	135,808	252,488	5,511,184	23,92,02,145
1931 ..	218	6,290,233	138,153	250,357	5,470,906	24,01,66,075
Percentage increase or decrease ..		+1·9	+1·7	−0·84	−0·74	

Production in and Imports of Yarn and Piece-goods into Bombay Presidency

Year ending 31st March	Yarn (in million pounds)			Piece-goods (in million yards)		
	Presidency production	Imports into the Presidency	Percentage of imports to production	Presidency production	Imports into the Presidency	Percentage of imports to production
1929-30	467	19	4·1	1,725	789	45·7
1930-31	476	9·9	2·1	1,830	347	18·9
1931-32	407*	11·6†		1,616*	339†	

* Figures ending 31st December 1931. † Figures ending February 1932.

3. **Woollen Mills.**—The condition of the woollen industry continued to be unsatisfactory during the year. In 1920 there were five woollen mills in the Presidency. In 1929 there were only three such mills working in the Presidency. During the latter part of 1929 one of these mills with a paid up capital of Rs. 13 lakhs went into liquidation. No new mills were started. Thus, in the year 1931 only two mills were working as they were in 1930. From the point of view of quantity there was a slight increase of 4 per cent. in the production during 1931 but from the point of view of value there was a big fall of 31 per cent. as compared to last year. Thus, in the year 1930 the Woollen mills showed a production of 1,691,242 lbs. valued at Rs. 30,91,787 whereas in the year 1931 the total production was 1,754,352 lbs. valued at Rs. 22,11,159. This sharp decline in value as compared with the increase in quantity has been due to a big fall in the prices of woollen piecegoods during the year under review.

Imports of woollens in Bombay and Karachi amounted to Rs. 1·73 crores in 1929-30, Rs. 74·91 lakhs in 1930-31 and Rs. 87·75 lakhs in 1931-32. From the latter figure the value of re-exports has not been deducted as the same is not yet available. In addition, Bombay also no doubt imported woollens from Cawnpore and other Indian centres. The local mills, therefore, met only a comparatively small part of the local demand. The industry fared badly during the year under review owing to a big slump in the market for woollen goods which is reflected in a big fall in the prices of woollen goods.

4. **Hosiery Industry.**—Both the cotton mills equipped with knitting machines as well as the several small hosiery factories in this Presidency have suffered on account of the General Trade Depression, their production

as well as outturn per annum having fallen. This was approximately 546,000 lbs. valued at about Rs. 16·38 lakhs in 1929-30 and 480,000 lbs. valued at about Rs. 13·08 lakhs in 1930-31.

The imports of both woollen and cotton hosiery have considerably decreased. The imports for 1929-30 were 2·84 million dozens valued at Rs. 41 lakhs and for 1930-31 they were 2·14 million dozens valued at Rs. 22 lakhs.

From the above outputs and imports of hosiery in this Presidency it will be noted that hosiery manufactured in the Presidency has declined by 12 per cent. whilst imports have fallen by 24·5 per cent. in quantity in each case.

That there is a wide scope for the further development of this industry is evidenced by the import figures and production figures for hosiery.

5. **Gas Mantles.**—A reference was made in paragraph 19 of the Annual Report of this Department for the year 1930-31 regarding manufacture of gas mantles by some firms in Bombay. The manufacture was maintained during the year under report.

Two new small factories have been started and it is reported that they are doing well. These factories, however, experience great difficulty in obtaining their chemicals like Thorium Nitrate, Cerium Nitrate, etc. Some of the factories have, therefore, undertaken experimental work for the production of these salts from Monazite Sand from Travancore State.

The table of imports given below will give an idea of the scope there is for this industry :—

Year	Total for India	Share of Bombay
	Value in lakhs of rupees	Value in lakhs of rupees
1929-30	8·41	4·71
1930-31	6·28	3·79
1931-32	3·93	2·65

6. **Chemical Industry.**—The chemical industry except the heavy chemical industry in the Presidency on the whole did fairly well during the year. The soap factories worked at their full capacity and some new soap works were started during the year. The pharmaceutical manufacturers also did fairly well. The makers of toilet goods like say cold creams, snows, hair oils, perfumes, etc., are reported to have done well, and several new products like tooth paste, shaving cream, shampoos etc. which were not produced in this Presidency are now being manufactured satisfactorily.

It is, however, to be regretted that the state of the heavy chemical industry did not improve. There are three heavy chemical manufacturing concerns in the Presidency and two of them worked at a loss during the year.

The Tariff Board Report was published during the year and the Government of India put into effect increased duties on several chemicals from 1st October 1931.

The increased duties with the exception of that on Magnesium Chloride will have effect only up to the 31st day of March 1933. The duty on Magnesium Chloride will have effect up to the 31st day of March 1939.

The period of operation of the revised duties has not been long enough to be reflected in the financial result of the working of the above companies during the year ending 31st March 1932.

7. **Sugar Industry.**—Two sugar factories were working in the Presidency during the year under report. The sugar factory mentioned in the last year's report produced 6,985 tons of white sugar during the season of 1931. Its sales also increased in value from Rs. 15·89 lakhs in the last year to Rs. 23·27 lakhs in the year under report. The company in question worked at a profit and declared a dividend of 6 per cent. It is expected that with the present enhanced duty on sugar the company will continue to do well.

The other sugar factory is yet in an experimental stage. It produced about 300 tons of white sugar during the season 1931. It is likely that with the present increased duty on sugar the factory may be able to establish itself permanently.

A new Company named the Swadeshi Sugar Company Limited was registered during the year with an authorised capital of Rs. 3 lakhs. The factory is to be established near Poona. Building and plant are in the course of erection and it is expected that the factory will start the production of white sugar in the near future.

In 1930-31 the net imports of sugar into Bombay and Karachi were 444,766 tons valued at Rs. 5·08 crores whereas in 1931-32 the same were 242,247 tons valued at Rs. 2·58 crores. As pointed out in the last year's report there is considerable scope for the manufacture of sugar in this Presidency.

8. **Match Industry.**—During the year under review one match factory was closed and one was removed to Hyderabad (Deccan). A new factory was, however, established during the same year. Thus, during the year there were 13 factories in the British Districts and 2 in the Indian States making a total of 15 factories in the whole of the Bombay Presidency. The total approximate investment in the industry is about Rs. 68 lakhs including the Western India Match Company's estimated investment of Rs. 32 lakhs. The average number of persons

employed during the year was about 5,000. The total capacity of all the factories in the Presidency is about 88 lakhs gross match boxes per year. Imports of matches during the year under report amounted to 96,809 gross match boxes valued at Rs. 91,481. It is reported that during the year most of the factories excepting the Western India Match Co. were not able to work at their full capacity and some had to be closed down entirely. The industry did not fare well during the year owing to keen internal competition.

9. **Paper Industry.**—Reference was made to the paper industry in the Bombay Presidency in paragraph 8 of the Annual Report of the Department of Industries for the year 1930-31.

There are three paper mills in this Presidency. Out of these two mills, one in Bombay and the other in Poona which are controlled by the same company continued working throughout the whole year under report. The remaining one mill which is situated in Bombay remained closed for want of work from March 1931. No new companies were registered during the year under report. The paid up capital remained the same, viz. Rs. 9·24 lakhs.

The average number of men employed daily increased from 594 in 1930 to 628 in the year 1931 or by about 6 per cent.

The production of paper increased from 2,348 tons valued at Rs. 9·19 lakhs in 1930 to 2,690 tons valued at Rs. 10·23 lakhs in the year 1931 or an increase by about 14 per cent.

The imports of paper during 1929-30 in Bombay and Karachi amounted to nearly 51,000 tons valued at Rs. 146 lakhs. In 1930-31 they were 26,237 tons valued at Rs. 95·95 lakhs as against 41,743 tons valued at Rs. 104·59 lakhs in 1931-32. The local production was equal to 9·78 per cent. of the imports for the year 1931-32.

The year under report was the first year that the industry did fairly well and the company managing the two mills mentioned above was able to pay a dividend.

10. **Glass Industry.**—There is only one registered establishment in the Presidency with a paid up capital of about Rs. 4·84 lakhs. Besides this company there are three unregistered concerns. No new companies were registered during the year under report.

The glass factories mentioned above manufacture globes, chimneys, jars and other glass hollowware giving employment to about 500 persons. The total output in these factories can be roughly put down at Rs. 3·50 lakhs per year or about 5·1 per cent. of the imports which in 1931-32 were valued at Rs. 68·4 lakhs. One of the factories situated in Ahmedabad has started to manufacture soda water bottles on a small scale. The quality of the bottles produced by the factory is improving and it has been reported that the bottles manufactured by the factory are gaining in demand at a slow but steady rate. The industry as a whole did fairly well.

11. **Glass Bangles.**—As mentioned in last year's report a fairly good-sized glass bangle factory has been started at Kandivlee. This factory produces about 36 lakhs dozen pairs of bangles worth about Rs. 2 lakhs and 60 thousands. This factory gives employment to nearly 500 persons and fared well during the year on account of indirect protection caused by the present exchange position and also the present surcharge on import duties.

This Presidency is the largest importer of glass bangles in this country. More than 64 per cent. of the total imports come to Bombay.

The following table of imports of glass bangles will be read with some interest :—

Year	Total imports into India	Total imports into Bombay and Karachi
	Value in lakhs of rupees	Value in lakhs of rupees
1930-31	49·90	32·17
1931-32	34·51	23·96

There is, therefore, a big scope for the bangle making industry.

12. **Oil Mills.**—At the end of the year 1930-31 there were in the Presidency ten oil mills with a paid up capital of Rs. 60·45 lakhs. In the year under report one oil mill with a paid up capital of Rs. 11,00,300 went into liquidation. Thus at the end of the year 1931-32 there were 9 mills with a paid up capital of Rs. 49·45 lakhs.

Besides the registered oil mills referred to above there were in 1931-32, 37 mills coming under the Indian Factories Act and 76 mills not coming under the Indian Factories Act but run by mechanical power as against 36 and 76 respectively in the previous year.

It is reported that the industry on the whole did not do well during the year.

13. **Vegetable Ghee.**—The Vegetable Ghee plant mentioned in paragraph 15 of last year's report continued to work during the year under review. It was mentioned in the same paragraph that a big firm with international resources and interests had decided to put up a plant for the manufacture of vegetable ghee in Bombay. The firm has now erected the plant and expects to put it into operation during the next few months.

With the increased production of Vegetable Ghee in India the imports have declined considerably as will be seen from the table of imports given below :—

Year	Total for India		Share of Bombay	
	Weight in tons	Value in lakhs of rupees	Weight in tons	Value in lakhs of rupees
1929-30	16,056	120·05	11,342	84·33
1930-31	14,801	109·03	9,013	64·42
1931-32	5,842·45	42·42	2,900·35	20·52

Taking into consideration the number of plants which are actually working at present in India together with the new plant referred to above, which will start operating soon, it can safely be said that the present total demand for Vegetable Ghee in India will be fully met by the Indian plants. There is, therefore, very little room for further development of this industry at present.

14. **Soap Industry.**—No new company was registered during the year under review. Besides the registered company mentioned in the last year's report, there are in this Presidency, so far as information is available, 34 unregistered companies. Over and above these several small factories have sprung up in the mofussil. Most of them manufacture washing soap and are doing fairly well. The quality of the washing and household soap manufactured by the four big factories compares very favourably with that of imported soap. As regards toilet soaps also the quality of the local toilet soaps of ordinary type compares favourably with imported soap of the same type.

The imports of soap in 1930-31 in the Bombay Presidency amounted to 7,614 tons valued at Rs. 45 lakhs, and in 1931-32 they were 7,640 tons valued at Rs. 40·87 lakhs. There is, therefore, yet considerable scope for the further development of this industry.

15. **Shoe Polishes.**—It was reported in last year's report that several small establishments for the manufacture of shoe polish had come into existence. Unfortunately most of them have more or less failed, but it is gratifying to note that some of the existing big and well known factories manufacturing oils, soaps, etc. have taken up the manufacture of shoe

polishes etc. and they have achieved success in this new line. The following figures of import will show the importance of this industry :—

Year.	Total for India.	Share of Bombay.
	Value in lakhs of rupees.	Value in lakhs of rupees.
1929-30	17·58	9·68
1930-31	13·01	7·50
1931-32	12·15	7·48

16. **Engineering Industry.**—In 1930-31 there were 26 registered companies with a total paid up capital of Rs. 99·71 lakhs. During the year 1931-32, 7 engineering works were floated with a total authorised capital of Rs. 6·15 lakhs. During this period 1 went into liquidation ; thus there are at present 32 registered companies. Besides these, there are a number of proprietary concerns. The total of big and small engineering concerns may be put down at about 143. The largest number is engaged in general repairing work.

It is interesting to note that an increasing number of small engineering factories is taking up the manufacture of textile machinery spares. The Exhibition recently held by the Indian Merchants' Chamber, Bombay, showed that very good progress has been made in the manufacture of textile machinery spare parts and it is hoped that soon the requirements of the market will be largely supplied by the local engineering factories.

During the year under report the Engineering Shops on the whole had to work under very difficult conditions largely because of the acute trade depression now prevailing.

17. **Gold and Silver Thread Industry.**—In line with all the luxury industries the Gold Thread Industry in the Bombay Presidency has felt the acute trade depression. The heavy fluctuations and rise in the prices of silver and gold during the year naturally greatly hampered gold thread manufacturers in their output and sales.

The industry did not do well during the year under report.

18. **Cigarette Industry.**—It is interesting to note that Cigarette Manufacture attracted a number of investors during the year. In spite of the general trade depression there was an addition of 4 new cigarette factories in the Bombay Suburban District and 2 in Sind to the 5 cigarette factories mentioned in the Annual Report of this Department for 1930-31. The increase in the cigarette factories is thus over 100 per cent. this year. The new and the old factories together give employment to a total of about 400 workers.

The annual local production of cigarettes in the above 11 factories is worth approximately about Rs. 16·4 lakhs or about 32·6 per cent. of total annual imports valued at Rs. 50·28 lakhs in the Bombay Presidency.

The acreage under tobacco cultivation in India is about 1,362,000 acres and the estimated yield is 486,428 tons of tobacco. Out of the total acreage about 100,000 acres are exclusively cultivated for the highest class of cigarette tobacco equal to one of the best American Virginia Brands. The total yield is about 28,000 tons which could be utilised for the manufacture of good quality cigarettes.

The imports of cigarettes into the Bombay Presidency have declined from Rs. 76 lakhs in 1929-30 to Rs. 50 lakhs in 1930-31. This is due to the extreme trade depression now prevailing and also to the heavy increase in the manufacture of locally made cigarettes.

On the whole the industry is reported to have done well during the year. There still exists, however, a large scope for further development of this industry in the Bombay Presidency.

19. **Rubber-soled Canvas Shoes.**—It was mentioned in the Annual Report for the year 1930-31 that a new factory for the manufacture of rubber-soled canvas shoes had been started in the Suburbs of Bombay. This factory was compelled to close down owing to sudden cut in prices by Japan. This industry has grown so rapidly in recent years in Japan that it is now one of the world's leading producers, and second to none in the export field. Japan has gained complete control over the market for rubber-soled canvas shoes in India at the expense of such former leading suppliers as the United Kingdom, Canada and the United States of America. In the year 1930 Japan supplied more than 85 per cent. of the total Indian imports in these goods. The Japanese competition is chiefly of price nature, the quality of the Japanese product being generally considered somewhat inferior.

The sudden price cutting on the part of Japan was, however, during the year under review counterbalanced by an increase in duty to 25 per cent. *ad valorem* including the surcharge, the minimum being Rs. 3-12-0 per dozen pairs. It is expected that with this duty in force it will be possible to restart the factory referred to above.

The following table of imports and prices will be of interest :—

Year.	Total for India.		Share of Bombay.	
	Pairs in lakhs.	Value in lakhs of rupees.	Pairs in lakhs.	Value in lakhs of rupees.
1929-30	27·81	41·18	11·18	13·43
1930-31	50·39	41·15	19·10	15·75
1931-32	64·35	41·52	18·01	11·28

It will be noticed that there has been in the last 2 years an enormous decrease in the price of shoes. This will be obvious from the fact that about Rs. 41 lakhs was the value of about 28 lakhs of pairs in 1929-30, about 50 lakhs of pairs in 1930-31 and about 64 lakhs of pairs in 1931-32.

20. **Manufacture of Clocks.**—The manufacture of electric and other clocks has been undertaken recently in the Bombay Presidency by three firms. Two of these concerns are situated in Bombay and one in Poona.

The Swadeshi Electric Clock Manufacturing Company, Bombay, which makes Electric Clocks, is reported to have supplied electric clocks to various states and private institutions to the entire satisfaction of their clients.

The Indian Clock Manufacturing Company, Bombay, manufactures Tower Clocks driven by weight only. It has manufactured tower clocks for a number of local bodies, public institutions and states.

Hindustan Clocks, Poona City, is a proprietary concern which makes household and office clocks and secured a running contract for 1931-32 from the United Provinces Government Stores Purchase Department.

NEW INDUSTRIES

21. During the year under report some new industries were started in the Presidency; some of these are reviewed herebelow.

22. **False Pearls and Glass Beads.**—A factory has recently been started for the manufacture of false pearls and beads in Bombay. The factory started work in April 1931 and was able to compete with similar Japanese articles for some time.

The following table of imports of beads and false pearls will show the importance of the industry :—

Year.	Total for India.		Bombay and Karachi.	
	Quantity.	Value.	Quantity.	Value.
	Cwts.	Rs.	Cwts.	Rs
1929-30	37,307	30 61,106	18,096	13,85,273
1930-31	19,022	15,71,774	9,346	8,56,704
1931-32	15,497	9,43,397	7,503	5,00,307

During the year under report the Government of India referred to the Tariff Board the enquiry on the Indian Glass Industry. The case of the industry in this Presidency including that for glass bangle industry and the false pearls and beads making industry was represented to the Board by this Department.

23. **Carbon Papers, Typewriter Ribbons and Stamp Pads.**—There is a fairly good demand for these articles in this country and it is interesting to note that a factory has been recently started in Karachi for the manufacture of these products. The factory has been put up and is being worked by an Indian who has received special training in the manufacture of these articles in Germany.

The carbon papers manufactured by this concern have been used by this Department and have been found to be satisfactory. The firm has been recommended to the Superintendent, Government Printing and Stationery, Bombay, and some other large consumers.

24. **Manufacture of Pickers.**—A new factory has recently been established in Dharavi (Mahim) for the manufacture of leather pickers from raw buffalo hide which are used in cotton mills. At the request of the proprietors of the factory the samples of pickers manufactured by them were tested at the Victoria Jubilee Technical Institute which reported that the pickers made in the factory were slightly more robust than others of imported variety and showed fewer signs of wear and distortion in the guide holes. The result of the tests showed that the pickers manufactured in the factory were quite as good as those of the imported variety.

The name of the factory in question was brought to the notice of the Millowners' Association, Bombay and Ahmedabad, and to some prominent mills in the mofussil. It was reported that the pickers manufactured in this factory were being tried out in a number of the large groups of mills in Bombay. The firm also reported to this office that as a result of the action taken by this Department they had received enquiries for their pickers from Ahmedabad Mills.

25. **Casein Products.**—Manufacture of Casein was taken up by the small dairies in the Kaira District during the war time and since then Kaira District has been and is the only centre in this Presidency where casein has been and is being manufactured on commercial scale. All the casein that was being produced was exported and nearly 90 per cent. of the export went to Germany.

The export of Casein during the last several years before the year 1930-31 was nearly constant. The value of the exports on the average was Rs. 4·75 lakhs per year. During the year 1930-31, however, due to the general trade depression all over the world and due to other reasons the price of Casein came down and so the exports were valued only at

Rs. 1·64 lakhs. Taking advantage of this situation the Polson Manufacturing Company who have been the producers and exporters of large quantity of Casein for the last so many years have now put up a plant for the manufacture of Casein Products. During and after the War casein has found many applications in arts and industries. Some of the important applications are in the manufacture of waterproof casein glues, casein sizing materials, paints, etc. The Polson Manufacturing Company has put on the market a waterproof glue and several sizing and finishing materials under various trade names. Their waterproof glue is called Glupol and their sizing and finishing materials Fixpol, etc. The products are good and the Company deserves encouragement at the hands of millowners.

26. **Split Pulleys.**—A factory has recently been established in Bombay for the manufacture of W. I. Split Pulleys. The factory is a proprietary concern with an investment of about Rs. 50,000. The size of the pulleys manufactured ranges from 8" diameter to 96" diameter and it is claimed by the proprietors that they can manufacture the pulleys 24 per cent. cheaper than the landed price of similar imported pulleys. It is gratifying to note that the workmanship of the pulleys turned out is satisfactory. The pulleys in question are quite equal in workmanship and material to any of the imported W. I. Split Pulleys. This is the only plant in the Bombay Presidency which manufactures split pulleys and as such it deserves every encouragement at the hands of the interested public.

NEW FLOTATIONS

27. Despite the fact that there was general trade slump, during the year under review many new companies were floated. These were :—One for making of safes and cashboxes, etc., with authorised capital of Rs. 8 lakhs, 7 engineering companies with authorised capital of Rs. 6·15 lakhs, 1 cigarettes, etc., manufacturing company with authorised capital of Rs. 2·125 lakhs, 5 cinema companies with authorised capital of Rs. 18 lakhs, 1 match company with authorised capital of Rs. 1 lakh, 5 chemical companies with authorised capital of Rs. 4·8 lakhs, 8 motor works with authorised capital of Rs. 18·25 lakhs, 1 clock company with authorised capital of Rs. 50 thousand, 1 dye works with authorised capital of Rs. 75 thousand, 1 vegetable products company with authorised capital of Rs. 10 lakhs, 4 sugar companies with authorised capital of Rs. 34 lakhs, 1 rubber goods manufacturing company with authorised capital of Rs. 20 thousand, 2 cotton ginning and pressing companies with authorised capital of Rs. 18 lakhs, 5 electric companies with authorised capital of Rs. 13·7 lakhs, 9 cotton mills with authorised capital of Rs. 85·25 lakhs, 1 healds and reeds manufacturing company with authorised capital of Rs. 1·5 lakhs, and 1 oil mill with authorised capital of Rs. 2 lakhs, making a total authorised capital of Rs. 2·24 crores.

During the year 1931 about 64 new concerns started working or were sufficiently extended so as to come under the Indian Factories Act. Important among these were :—7 ginning factories, 5 textile mills, 5 weaving factories, 6 gur factories, 4 metal works, 2 oil mills, 4 dyeing factories and one factory each of the following : matches, gas mantles, cigarettes, salt, engineering, tiles, bangles, rubber goods, confectionery and glass.

During the year under review, 1 electric company, 5 cotton mills, 1 engineering works, 2 ice and aerated water companies, 1 oil mill and 1 clay and stone and concrete, etc., manufacturing company with total paid up capital of Rs. 72·6 lakhs went into liquidation.

CHAPTER II

WORK OF THE DEPARTMENT—ORGANISED INDUSTRIES

28. In this Chapter a brief description is given of the various activities of the Department in the interest of organised industries.

There are many small scale organised industries in this Presidency, not to speak of cottage industries, which have in use technical processes and appliances capable of considerable improvements which when carried out will enable the factories in question to produce better quality and larger quantities of finished products for the same labour and cost. This kind of work naturally involves a careful study of the industry concerned and a considerable amount of experimental work. Successful endeavours in this direction would enable the industries concerned to compete better with imports and would also increase production in the country. During the year under review work in connection with Gold Thread Industry was continued and work in connection with refining of Fish Oil and Natural Soda was newly undertaken by the Department.

In a similar manner, there are certain small scale industries which could be established in the Province and which at present either do not exist or exist on a restricted scale. In order that such industries may be established, some practical experimental work in connection therewith is necessary. During the year under report the Department continued its work on laboratory scale in connection with Tallow Substitute. Work was also undertaken in connection with essential oils and straw-boards.

A fairly large number of inquiries relating to commercial and industrial statistics was dealt with during the year. Some work was also done under the head " Mines and Minerals " and " Fishing ". Examples of work under all the above heads and in connection with State-Aid to Industries are given in the following paragraphs.

PRACTICAL INVESTIGATIONS AND EXPERIMENTS WITH A VIEW TO IMPROVE THE QUALITY AND QUANTITY OF PRODUCTS OF EXISTING INDUSTRIES

(*a*) The Real Gold Thread Industry

29. The Gold Thread Industry was surveyed in detail in the last Annual Report of this Department. It was mentioned in that Report that the Department was then engaged in assisting cottage manufacturers of gold thread in the technique of manufacture and that an improved type of machine which was designed and constructed by this Department for gilding, winding, and drying the gold thread would be demonstrated at Government expense to the gold thread manufacturers of the Bombay Presidency. The above machine which was designed by the Industrial Engineer and constructed by a local Engineering firm was demonstrated successfully in Surat and Poona.

With this improved type of gilding machine the operator can keep complete control on the temperature, electric current, winding speed and drying of the gilded thread. This has enabled the manufacturer to improve the quality of his gold thread by increasing the lustre and softness of his thread keeping a uniform shade and economising in the working and manufacturing costs of gold gilding.

The demonstration was first opened in Surat in May 1931 in the locality where there are gold thread manufacturers and was continued there for some considerable period. The gold thread manufacturers were given instructions on the preparation of gold solution, mixing of chemicals, control of temperature, electric current, winding speed and the drying of gilded thread. Gold gilding of a considerable quantity of silver thread was successfully carried out on the demonstration machine. Later during the year Government were pleased to sanction the entertainment of a demonstrator to assist the Industrial Engineer in this work. The demonstration was continued at Surat till the end of January 1932 after which it was transferred to Poona. In the beginning of the demonstration opposition was experienced from interested parties, but with tactful handling the situation improved and a large number of men continually attended the Demonstration and received instructions. Fourteen new similar gold gilding machines were manufactured in Surat for the local factories in the short period that the Demonstration was kept in that city.

Due to the existing trade depression the poorer section of gold thread manufacturers was unable to adopt the gilding machine. It is, however, hoped that with improved conditions this would be altered and most of the manufacturers will be able to take advantage of the demonstration made.

The demonstration work at Surat was closed on 31st January 1932 and was transferred to Poona, where it remained till the end of February 1932 when the services of the demonstrator were terminated.

In so far as the difficulties in gold gilding processes in the manufacture of gold thread are concerned, these have been successfully solved and as pointed out above the improved machine and processes were successfully demonstrated at Surat and Poona.

The attention of the Department was next engaged on the design and construction of other machines which are also required for the manufacture of gold thread. These are (1) the wire drawing bench for cottagers, and (2) the wire flattening rolls. The existing machines have been considerably improved and the improved patterns have now been constructed and it is hoped in due course to demonstrate these machines to the gold thread industry of the Bombay Presidency.

(*b*) Refining of Sardine Oil

30. It was reported in the last year's report that after some preliminary work on small samples of sardine oil submitted by the Collector of Salt Revenue this Department had asked for 10 lbs. of samples of sardine oil from a fish oil manufacturer in Majali. The samples were received and a number of experiments was carried out to deodourise and decolourise the oil. Unlike the small samples sent by the same gentlemen last year all efforts to decolourise and deodourise these samples by simple methods have failed. The results so far obtained indicate that improvement in the method of extraction of the oil might make the problem of decolourisation and deodourisation simpler. Further work is in progress.

(*c*) Refining of Natural Soda

31. Natural Soda is found in several localities in this Presidency. The Natural Soda Lakes of Sind have been well known for centuries and there was a considerable export trade in natural soda produced in Sind. The industry has practically died out now. Natural soda found near Kapadvanj in the Kaira District and round about Prantij in the Ahmedabad District has been used for the manufacture of glass and soap at these places for several decades. Several investigators have done considerable amount of work on the natural soda found in this country and almost all of them have come to the conclusion that unless definite conditions for the separation of sodium carbonate and bicarbonate from natural soda have been worked out the natural soda found at various places cannot be efficiently utilised. Samples of natural soda found at various important places in the Presidency were collected by the Department and it was found that they all contain sodium carbonate, sodium bicarbonate, common salt or sodium chloride, and sodium sulphate. Some samples also contain traces of borax. After examining various samples of natural soda it was found that the best way to separate the carbonates and bicarbonates was by taking advantage of the laws of solubility. Work therefore has been undertaken to work out proper

data to find out the most favourable conditions for the separation of the carbonates and bicarbonates. It has been found that higher temperatures favour the separation. Work is progressing. As mentioned in paragraph 71, natural soda found round about Prantij is used in large quantities for the manufacture of the well-known Prantij soap balls. It is hoped that the results of the investigation will help considerably the soap industry of Prantij.

PRACTICAL INVESTIGATIONS AND EXPERIMENTS FOR POSSIBLE NEW INDUSTRIES

(*a*) Tallow Substitute

32. Experimental work on the preparation of a substitute for imported animal tallow from vegetable oils for the textile mills was continued. The problem has been attacked from three different directions to get a substitute, i.e.

(*a*) By hydrogenation of an individual oil or mixtures of vegetable oils.

(*b*) Partially saponifying an individual oil or mixtures of vegetable oils.

(*c*) By mixing hard vegetable fats with vegetable oils in definite proportions so as to obtain a product with about the same melting point as the high grade imported animal tallow.

Experiments have shown that—

(1) it is possible to get a product of the same melting point as the animal tallow by all the three methods (*a*), (*b*) and (*c*) mentioned above ;

(2) it is possible to get a product with the same melting point and about the same iodine value and saponification value by methods (*a*) and (*c*) mentioned above.

Several samples of tallow substitute have been prepared and tried out. The scientific and other details of the work will be available to the public when the work is completed.

(*b*) Essential or Volatile Oils

33. Essential or volatile oils play an important part in the life of human beings. This country imports large quantities of essential oils for the preparation of essences, flavours, perfumes, cosmetics, etc. The imports of essential oils per year in this country and the Bombay Presidency are on the average worth Rs. 12 lakhs and Rs. 3½ lakhs respectively. It was accordingly decided to investigate as to which of the essential oils imported into the Presidency can be produced here. After a study of the garden and similar crops of the Presidency it was found that there was

a possibility for the production of Peppermint oil. Peppermint plant is grown in fairly large quantities by the flower-garden owners of Dahanu. Samples of the plant were brought from Dahanu and peppermint oil was extracted on laboratory scale. From the yield of the oil and from the data obtained from the garden owners of Dahanu about the yield of peppermint crop per acre it was found that there are possibilities of producing peppermint oil on a small scale in the Presidency on economic and remunerative basis.

Peppermint oil is used in the manufacture of confectionery like the well-known "Extra Strong", tooth paste, cough drops, plasters like antiphlogistine and as a flavouring agent in medicines. All these articles are now being made in Bombay, hence locally made peppermint oil is likely to find a ready demand.

(c) Straw Boards

34. There is a large demand for card-boards, straw-boards, paste-boards, mill-boards, etc., in the Presidency and the demand is increasing and is likely to continue to do so due to the development of industries producing products requiring adequate packing and due to the expansion of book publishing industry.

The total imports of these materials given below will give an idea of the scope there is for this industry:—

Year.	Total for India.		Share of Bombay.	
	Quantity in lakhs of cwts.	Value in lakhs of rupees.	Quantity in lakhs of cwts.	Value in lakhs of rupees.
1928-29	3·3	36·9	1·0	9·3
1929-30	3·8	37·4	1·4	11·8
1930-31	3·1	26·9	1·5	11·6

As a preliminary investigation in this line, work has been undertaken to find out the suitability of various grasses for the manufacture of these products. The straw that is being at present investigated is the rice straw. Experimental data is being worked out to find out definite conditions of temperature, pressure, alkali concentration, etc., for the production of suitable pulp for the production of straw-boards and paste-boards etc.

REPRESENTATIONS TO THE TARIFF BOARD

(*a*) Paper Industry

35. During the year under report the Tariff Board was asked by the Government of India to examine the question how far the Bamboo Paper Industry (Protection) Act of 1925 had achieved its purpose of promoting the manufacture in India of paper from Bamboo and to consider whether continuance of protection to the industry after March 1932 was desirable.

The Department submitted a note on the paper industry in the Bombay Presidency to the Tariff Board with its recommendations.

The recommendations of the Tariff Board which have been accepted by the Government of India may be summarised as follows :—

(1) The present protective duty on paper should be continued for a period of 7 years.

(2) Duty at the rate of Rs. 45 per ton should be levied on the imported wood pulp.

The paper factories in this Presidency are compelled to use imported wood pulp.

(*b*) Glass Industry

36. The Indian Glass Manufacturers' Association sent a representation to the Government of India in 1926 stating that the Glass Industry in this country needed protection and requested that the question be referred for investigation to the Tariff Board. The Government of India at that time did not consider it necessary to comply with this request. They were, however, pleased during the year under report to refer the question of protection to glass industry to the Tariff Board for enquiry. The Board came to Bombay in October 1931. This Department supplied information to the Board about the glass industry in the Presidency as well as in other provinces and helped the Board in getting in touch with and visiting the important glass factories in the Presidency. The Department also submitted to the Board a note on the glass industry of the Bombay Presidency with its recommendation for protection for glass bangles, false pearls, glass beads, globes, chimneys, jars and other hollow-wares and soda water bottles, all of which are made in this Presidency.

INVESTIGATION OF POSSIBLE NEW INDUSTRIES AND PREPARATION OF ESTIMATES

37. **Estimates prepared in 1930-31.**—In connection with the estimates mentioned in paragraphs 39 to 48 of the Annual Report of this Department for the year 1930-31, 64 enquiries from different parts of the Presidency were received during the year under report. Summaries of the estimates were sent in all cases and on further response from the parties

detailed estimates were also sent. 45 such detailed estimates were supplied out of which 14 were for envelopes, 7 for disinfectants, 5 for Blanco, 5 for shoe laces and the remaining 14 for other industries.

Besides this, copies of all the detailed estimates prepared by this Department were supplied to the Karachi Indian Merchants' Association, Karachi, and the Buyers' and Shippers' Chamber, Karachi, where these were kept open for reference to the public of Karachi.

Copies of summaries of the estimates were also sent to the Indian Merchants' Chamber, Maharashtra Chamber of Commerce and the Deccan Merchants' Association, Bombay, with an intimation that detailed estimates will be supplied by the Department to those interested and likely to start the industries in question.

38. **New Estimates.**—Since the estimates referred to above were prepared prices of machinery have gone up ; the estimates are, therefore, being revised and brought up to date.

During the year under review the following new estimates were prepared :—

(1) Extraction of hemp fibre.
(2) Manufacture of cigarettes.
(3) Cold storage plant.
(4) Wood working.
(5) Silk spinning and twisting.

39. **Extraction of Hemp Fibre.**—In the Bombay Presidency Hemp is extracted by hand with the result that different qualities of fibres are obtained. The lack of uniformity goes against the selling of the fibre in the markets of Europe. The Industrial Engineer investigated the possibilities of power-driven hemp extraction factories and a detailed estimate has been prepared which contains items of machinery, materials, expenditure and costs of extracted fibre, etc. The estimate will be supplied to genuine investors. The capital investments will be as follows :—

	Rs.
Investment on machinery	11,500
Investment on working capital	1,200
	12,700

40. **Manufacture of Cigarettes.**—The consumption of cigarettes in the Bombay Presidency is far in excess of the manufacturing capacity of the present cigarette factories ; there is, therefore, a large field for the further development of the industry. The Industrial Engineer investigated this industry during the year and a detailed estimate has been prepared. The estimate contains details of machinery, raw materials, packing materials, working expenditure and manufacturing

costs and is available to genuine inquirers. The capital necessary for a medium-size of cigarette factory will be as follows :—

	Rs.
Investment on machinery	60,000
Investment on working capital	1,10,000
Investment on stocks of tobacco for curing and maturing	50,000
	2,20,000

41. **Cold Storage.**—There are several fruits, the chief amongst them being sour lemons, which have their harvest in the winter months of the year whereas the market demands take place during the summer months. It is not possible to satisfy this market demand unless the sour lemons can be kept in Cold Storage. In order to investigate the commercial possibilities of cold storage for fruit in this Presidency the Industrial Engineer made the necessary investigations, and as a result a detailed estimate has been prepared which contains items of machinery, working expenditure and cold storage costs, etc. This is available to interested inquirers. The capital necessary for a cold storage plant for 4,000 boxes of lemons would be as follows :—

	Rs.
Investment on machinery	20,000
Investment on working expenditure	4,100
	24,100

42. **Wood Working Plant.**—Investigations into the possibilities of wood working plant for small investors were made and an estimate for manufacture of moulded wooden framework has been prepared by the Industrial Engineer. The estimate contains all the necessary items of machinery, cost of raw materials, manufacturing costs, etc., and is available to genuine investors. Capital investment is as follows :—

	Rs.
Investment on machinery	6,200
Investment on working capital	2,400
	8,600

43. **Silk Spinning and Twisting.**—An inquiry was received in this office regarding particulars of machinery for a power-driven spinning plant for filature silk. It was decided to investigate the commercial possibilities of such a plant, and an estimate was prepared containing details of machinery, working expenses and cost of spinning and doubling, etc. This is also available to genuine investors.

44. **Industries under Investigation.**—Estimates for the following industries are at present under preparation :—

(1) Lead Pencil Manufacture.
(2) Electric Lamp Manufacture.
(3) Umbrella fitting and accessories manufacture.
(4) Manufacture of Buttons.
(5) Manufacture of Composition Insulation Board.

SOLVING OF PRACTICAL DIFFICULTIES IN THE PROCESSES OF MANUFACTURE AND RENDERING OF TECHNICAL ADVICE

45. Apart from the work of improvements in technical processes in the Gold Thread Manufacture, Refining of Fish Oil and Natural Soda, to which a reference is made elsewhere, a number of requests was received in the Department for assistance in the solution of practical difficulties. The more important of these are briefly summarised hereunder.

(1) A gentleman in Bombay interested in the manufacture of gas mantles wanted to prepare certain chemicals like thorium nitrate, magnesium nitrate, calcium nitrate, etc., and also wanted to overcome some difficulties regarding the proper acidity of the impregnating solutions. Detailed information was supplied and actual demonstration was given for the preparation of the chemicals from the raw materials. The gentleman has since then put up a small factory for the manufacture of gas mantles and is reported to be doing good business.

(2) A gentleman in Bombay approached this Department for advice with regard to the difficulties he was experiencing in the preparation of glucose from broken rice. He was informed that it was not possible to produce a good quality glucose suitable for confectionery trade from rice as such. He was given a detailed process for the manufacture of glucose from starch.

(3) One of the local confectionery manufacturing concerns experienced difficulties in the manufacture of extra strong and boiled goods, etc. The Industrial Chemist visited the factory and suggested several additions and alterations in the machinery, the important ones being a special sugar grinding mill, vacuum pan, exhaust fans, steam jacketed sugar boiling kettles and a steam boiler. The concern has accordingly bought and installed new machinery worth several thousands of rupees and is doing well.

(4) A firm in Bombay manufacturing perfumed spirits and toilet articles was experiencing difficulty in making stable emulsions ; use of proper stabilizers was suggested.

(5) A young chemist in Bombay found his cost of production of aluminium acelate very high. He was making it from imported aluminium hydroxide and acetic acid. He was advised as to how to bring his cost of production down.

(6) A gentleman engaged in refining gold on large scale wanted to know the proper method of reclaiming copper from copper nitrate solution which he had to throw away as waste in large quantities every day. Experimental work was done on the copper nitrate solution from his factory and he was supplied with a detailed process for reclaiming copper from copper nitrate.

(7) A chemist attached to an oil mill in Bombay wanted to have information regarding the bleaching materials which he could profitably employ in bleaching groundnut oil. He was given detailed information about the patent decolourising charcoals and where they can be had.

(8) A soap manufacturing firm wanted to know of a device by which they could make small batches of soap under specific conditions of temperature. They were supplied with a sketch of proper device and detailed information about its working.

(9) A crayon manufacturing firm wanted to manufacture tailor's chalk. They were supplied with proper information as regards raw materials and the method of manufacture, etc. The same firm wanted detailed information about the manufacture of Plaster of Paris and the proper pigments for the manufacture of coloured crayons. They were supplied with a sketch of proper apparatus for the preparation of Plaster of Paris and were given details of the process. A list of proper colouring materials for the crayon was also supplied.

(10) A writing ink manufacturer wanted to know how to filter ink on large scale and also wanted to know the methods and means to increase the fluidity and preserving power of inks. A sketch of a small special hand-operated filter press, as well as a list of substances that would help in increasing the fluidity and preservative power were supplied.

(11) An oil mill in the Presidency wanted to know the method by which they could completely decolourise the oil. Details of the process, apparatus and equipment were supplied.

(12) A firm of Bombay and Surat wanted to know the detailed process for the manufacture of sugar-coated pills and for the decolourisation of sugar syrup. Details of the process with sketches of apparatus and equipment were supplied.

(13) A gentleman from Chikodi, district Belgaum, had been making soap by cold process but found that his soap did not come up to the standard. He, therefore, requested this office to advice him in the matter of producing good soap by cold process. A complete note on the manufacture of soap by cold process was thereupon supplied to him. He was also supplied with a list of bulletins to which he might refer with advantage.

(14) A gentleman in Bombay requested this Department to help him to solve his difficulty in the matter of fusing platinum wire with glass which he wanted to use for the preparation of electrolytic chlorine. A complete process for the fusing of platinum wire in glass tubes with a view to make electrodes and the way in which the same should be fixed in his electrolytic cell for the preparation of chlorine water was demonstrated to him. The gentleman acted in the way shown to him and produced chlorine water which was sent to this office for determining the chlorine contents. These were determined for him and were found to be very low. He was, therefore, advised to use other forms of electrodes and asked to fit up small apparatus for determination of chlorine in the solution. He was given a detailed list of apparatus to be used and actual demonstrations were given to show the exact method of procedure for the determination of chlorine. The enquirer has acknowledged that with the advice given to him from time to time by the Industrial Chemist he has been able to prepare chlorine water and has put it on the market.

(15) Two enquirers from Poona wanted to know the process for preparing sealing wax similar to the one that is used by Post Offices and Railways. A complete note on the preparation of such sealing wax was supplied to both.

GENERAL ASSISTANCE TO INDUSTRIES

(*a*) Concessions in Railway Freights

46. Requests were received from some firms for help in obtaining concessions in Railway freight. The necessary investigations were made in each case and where the results justified it a recommendation was made to the Railway administration concerned.

(*b*) Testing of Samples

47. (1) A firm in Bombay were given assistance in testing a sample of roughcut 14" renovated file which they had sent to this office. It was forwarded to the Victoria Jubilee Technical Institute where it was tested against a new Sheffield file of the same size and cut. The result of the test was communicated to the firm and they were informed that the Industrial Engineer of this Department would be glad to render such help for improvement of the product as he can.

(2) A firm who are makers of agricultural implements in this Presidency also make malleable castings. The firm sent some samples of malleable casting work including spanners etc. for test. The samples were forwarded to the Victoria Jubilee Technical Institute where they were tested and the results of the test were communicated to the firm in question together with some suggestions made by the Industrial Engineer of this Department.

(3) A gentleman from Bombay sent two samples of textile oil prepared by him to this Department for opinion. The samples were subjected to a test result of which was communicated to the party concerned.

(*c*) OBTAINING SPECIALLY DENATURED SPIRIT FOR THE SOAP INDUSTRY

48. Transparent soap was being manufactured in this Presidency by the use of ordinary methylated spirit. By this method it was not possible to manufacture good quality transparent soap. Two soap manufacturing firms, therefore, approached this Department for assistance to make duty-free alcohol available to the Soap Industry. The firms were referred in the first instance to the Commissioner of Excise and the case was recommended to that officer with the suggestion that specially denatured alcohol may be made available to the industry duty-free. The Commissioner of Excise agreed with this suggestion and requested this Department to suggest suitable denaturants which will serve the purpose of the Soap Industry and also to prepare specifications of the denaturants in question. The Department did this work and also suggested that a price of Rs. 2-14-0 per gallon may be charged for this specially denatured spirit. The proposals in question were acceptable to the Soap Industry as well as to the Commissioner of Excise. The Commissioner of Excise has now made available to the Soap Industry specially denatured spirit suitable for the industry at the above rate and some leading soap factories have already taken advantage of this concession.

COMMERCIAL AND INDUSTRIAL INTELLIGENCE

49. This branch of the Department continued to be both popular and useful.

As usual enquiries from abroad for opening commercial relationships with Indian firms were transferred to the Director General of Commercial Intelligence and Statistics, Calcutta. Enquiries from Indian firms for opening trade relationships with British firms were transferred to H. M. Trade Commissioner, Bombay.

Enquiries received and dealt with in this office may be divided into the following groups :—

(*a*) Statistical i.e. asking for figures of imports and exports of raw materials as well as finished products.

(*b*) Names of dealers in and sources of raw materials.

(*c*) Names of Indian manufacturers of various articles.

(*d*) Enquiries covering standing etc. of firms.

(*e*) Miscellaneous.

In the year 1931-32 under groups (*a*), (*b*), (*c*) and (*e*) 262 enquiries as against 234 in the year 1930-31 were received and answered.

Under group (*d*) twenty enquiries as against 6 in 1930-31 were received for supply of information regarding financial standing and particulars of firms etc. Of these, eleven were from the Director General of Commercial Intelligence and Statistics, Calcutta, six were from the Stores Purchase Officer, United Provinces, one from the Director of Industries and Commerce, Mysore, Bangalore, one from the Controller of Purchase, Indian Stores Department, Bombay Circle, and one from the Collector of Bombay. Information was collected and supplied in practically all the cases.

MINES AND MINERALS

50. The Department collected during the year the necessary statistics from the various District Magistrates and submitted a consolidated return to Government covering the Act and non-Act Mines in the Presidency. The position revealed by the statistics was as follows :—

During the year ending 31st December 1931, 8 applications for prospecting licenses and mining leases were disposed of. Of these, 5 were for manganese ore, 2 for chrome ore and 1 for Asbestos and Talc (Soapstone).

The only mineral of importance during the year ending 31st December 1931 under the non-Act Mines was Fuller's Earth. 12,865 maunds of this earth valued at Rs. 10,452-13-0 were raised from the Met Khan Mine in the Hyderabad (Sind) District.

The Taibpur Bauxite Mine which was working during the last calendar year was closed throughout the calendar year 1931. 5 Manganese mines were worked in this Presidency during the year ending 31st December 1931 with an output of 32,658 tons valued at Rs. 2,11,792 at the pit's mouth as compared with 6 mines working during the last preceding year with a total production of 43,398 tons valued at Rs. 3,74,385 at the pit's mouth. Different mines realised different prices at the pit's mouth but the average price per ton at the pit's mouth was Rs. 6-7-9. Comparing the production and value of the mineral during the year 1930 with that of 1931 it will be found that production has gone down by 24·75 per cent. whereas the value has gone down by 43·43 per cent. This sharp decline in the value of the mineral has been due to the very depressed condition of the Manganese Ore market in the world.

51. The Department dealt with a number of enquiries received from the public in connection with minerals, places of their occurrence, firms dealing in them etc. Some references were also received from Government and were dealt with. The following examples illustrate the nature of the work done.

52. Government in the Revenue Department referred to this Department the question of granting a mining lease for kaolinised rock in the Dharia Talavdi area in the Panch Mahals District to a firm which already held a lease for manganese ore over the same area. As it was feared that the kaolinised rock from this area may perhaps compete successfully with the China Clay at Castle Rock, the Industrial Chemist of this Department was deputed to carry out a survey of the area in question. From his report it was found that the rock in Dharia Talavdi area was inferior to China Clay from Castle Rock. It was therefore recommended to Government that the lease may be granted at a certain royalty.

53. The Director, Geological Survey of India, requested the Government of Bombay in February 1931 to seal up the borehole at Ghogha until some useful application could be found for the natural gas which was escaping from it. As the gas emerging from the borehole was reported to have commercial possibilities the question of sealing the borehole was referred to this Department for opinion and report. It was suggested that before any recommendations regarding the exploitation of the natural gas could be made it was necessary to determine (1) the nature of the gas, its composition and heat value, (2) the amount of gas, (3) whether the area contained gas as such or whether the gas occurred as an indication of petroleum. The Industrial Chemist of this Department who has had training as an economic geologist was thereupon sent to Ghogha for investigation. He carried out the survey of the whole area round about the borehole and collected samples of gas from the borehole. These were analysed by him and a report on the matter was submitted to Government.

FISHING INDUSTRY

54. The only grant available under this head was Rs. 500 for Oyster Culture in Sind. This work continued to be in charge of the Collector of Customs, Karachi.

Work of a general character, was, however, attended to by this Department.

The work on Fish Oil referred to in the last year's report was continued and details of same are given elsewhere in the report.

STATE-AID TO INDUSTRIES

55. During the year under review three applications for state-aid to industries were received. Two applications are pending for want of adequate information regarding financial standing etc. of the applicants which is being collected at present. The third application was rejected as the security offered by the applicant was on inquiry found to be insufficient in value to cover the amount of the proposed loan.

CHAPTER III

WORK OF THE DEPARTMENT—COTTAGE INDUSTRIES

56. As pointed out in the last year's report Hand Weaving is the most important single cottage industry of this Presidency, there being no less than about 100,000 hand looms at work with production valued at about 4·5 crores of rupees per annum. The Department, therefore, continued to concentrate its attention chiefly on this industry. Improved appliances and methods in hand weaving, dyeing and calico printing were popularised. The work of the Department in this direction is described herebelow.

Negotiations referred to in the last year's report regarding selling arrangements for Arts Crafts were continued. These negotiations are not yet completed. The Report of the Survey of Arts Crafts of this Presidency conducted by Mr. G. P. Fernandez for this Department was published during the year.

Three departmental investigations were made during the year, namely, (*a*) The condition of Hand Weavers, (*b*) Glass bangle making as a cottage industry, (*c*) Indigenous soap industry of Gujarat.

A review of this work will be found in the succeeding paragraphs.

PRACTICAL DEMONSTRATIONS OF IMPROVED APPLIANCES

57. **Hand Weaving Industry.**—The Department continued its propaganda of helping and advancing the hand weaving industry, which is the premier cottage industry of the Presidency, by means of its Weaving Schools and Demonstrations. Similarly Dyers and Calico Printers as well as weavers and others were helped in adopting improved and economic methods in dyeing and calico printing through Dyeing Demonstrations.

Two types of Weaving Schools were maintained by the Department during the year under report—viz. Weaving Schools for bona fide weavers and Weaving Schools for agriculturists.

In the Weaving Schools for bona fide weavers weaving of high class saris, dhoties, coating, shirting etc. was taught, the special feature being weaving of finer counts and up-to-date designs. The course in these schools covers a period of one year. Scholarships of Rs. 3 per month for the first 3 months and two prizes of Rs. 2 each per month for exemplary attendance and excellent work respectively are granted in the schools.

In the Weaving Schools for Agriculturists the course prescribed covers a short period of six months and weaving of khaddar, gudar, chaddar, dhoties etc. is taught. Scholarships and prizes are granted on the lines of the Weaving Schools for Weavers.

58. **Weaving Schools for bona fide Weavers.**—During the year under review there were 7 weaving schools for bona fide weavers under the control of the Department. All the schools are peripatetic institutions and are transferred from one place to another when their

work at a particular centre is over. They were conducted at the following places ; the number of Fly-shuttle looms introduced by them is mentioned against each :—

Division.	Place.	District.	Number of Fly-shuttle looms introduced.
Southern Division ..	Lakkundi ..	Dharwar ..	14
Central Division ..	Dharangaon ..	East Khandesh ..	123
Do. do. ..	Nasik ..	Nasik ..	58
Do. do. ..	Bhingar ..	Ahmednagar ..	52
Northern Division ..	Surat ..	Surat ..	5
Do. do. ..	Abrama ..	Do. ..	11
Sind ..	Hala ..	Hyderabad ..	89
Do. ..	Nasarpur ..	Do. ..	17

The weaving school at Surat completed its work there in May 1931 and was transferred to Abrama in the Surat District in June 1931 where it aroused considerable interest from the beginning.

The weaving school at Hala continues to be popular. The operations of the weaving section were extended to Sind in 1929. The school was first organised at Hala in November 1929. It aroused great enthusiasm amongst the local weavers who were not acquainted before with fly-shuttle loom. In the year 1929-30 it introduced 11 fly-shuttle looms, in the year 1930-31, 51 such looms were introduced and during the year under review 89 looms have been adopted by the local weavers. It is the most popular school in Sind and on the application of the local weavers it has been decided to continue it at Hala during the year 1932-33.

This school is also equipped with a Tape-weaving loom the demonstration of which was much appreciated by the weavers and during the year under report 4 such looms were introduced in Sind one of which was ordered out by the Hyderabad Central Prison.

In addition to the introduction of looms the weaving schools in Central Division and Southern Division introduced 159 and 6 dobbies respectively.

59. **Weaving Schools for Agriculturists.**—These schools are maintained exclusively for agriculturists with a view to train them in hand weaving by improved methods so that they can earn something during their spare-time and thus add to their income. During the year under

report two such schools were maintained—one in the Southern Division and another in the Northern Division.

(*a*) The Weaving School for Agriculturists in the Southern Division which was working at Balganur in the Dharwar District since September 1928 finished its work there in June 1931 training 25 agriculturists during the period, 16 of whom are working on their own fly-shuttle looms in their homes during spare time. The school was then transferred to Annigeri a village in the same district where it started its regular work from August 1931. 8 agriculturists first joined the school, one of whom left it after 4 months due to some domestic difficulties. The remaining seven finished the full prescribed course. Three have set up their own looms and the rest have ordered out same which are expected to be in working order shortly. A new batch of 8 students, being the maximum number which can be admitted to the school at a time, then joined the school. The pupils are regular in attendance like the former batch ; this would show that the school is popular.

(*b*) The Weaving School for Agriculturists in the Northern Division was working at Amleshwar, District Broach, in the beginning of the year. During its stay there it trained 12 agriculturists in hand weaving by modern methods. Four set up their own looms in their cottages and the others are expected to erect same shortly. The work of the school being over at Amleshwar it was transferred to Nikora a village in the same district where it started its regular work from January 1932. The school aroused considerable interest from the beginning and 9 agriculturists joined it. In a very short period of a couple of months it introduced three fly-shuttle looms. The school is becoming popular.

Both the above-mentioned schools are equipped with a cottage sizing set designed by this Department with a view to train the students in the preparatory processes of warping and sizing by improved methods.

60. **Weaving Demonstrations.**—In addition to the weaving schools mentioned in the foregoing paragraphs the Department maintained 11 cotton weaving demonstrations for bona fide weavers. These being peripatetic institutions were conducted in different villages in the Presidency for 6 to 12 months as was found necessary with a view to train the village weavers in the use of improved appliances and modern methods in hand weaving.

Each demonstration is equipped with two fly-shuttle looms on one of which the Demonstrator himself works and demonstrates the modern method in weaving while on the other he gives practice to local weavers coming to the demonstration. During the year under review the

demonstrations were held at the following places and they introduced the number of fly-shuttle looms mentioned against each :—

Division	Place	District	Number of Fly-shuttle looms introduced
Southern Division	Hosritti ..	Dharwar ..	10
Do. do.	Karajgi ..	Do. ..	9
Do. do.	Kaladgi ..	Bijapur ..	14
Do. do.	Girisagar ..	Do. ..	....
Do. do.	Bhoj ..	Belgaum ..	16
Do. do.	Borgaon ..	Do. ..	....
Central Division	Yawal ..	East Khandesh ..	70
Do. do.	Nateputa ..	Sholapur ..	5
Do. do.	Vairag ..	Do. ..	18
Do. do.	Karad ..	Satara ..	11
Do. do.	Kolewadi ..	Do. ..	6
Northern Division	Uttersanda ..	Kaira ..	6
Do. do.	Guttal ..	Do. ..	11
Do. do.	Undhela ..	Do. ..	1
Do. do.	Bhaner ..	Do. ..	6
Do. do.	Alipur ..	Surat ..	2
Do. do.	Broach ..	Broach ..	16
Sind	Lahori ..	Larkana ..	9
Do.	Lakhi ..	Sukkur ..	59

The Demonstration at Broach specially worked for the women weavers who were anxious to take to fly-shuttle looms. The Demonstrations at Borgaon and Girisagar started work at these places from 12th January and 15th February 1932 respectively. The Demonstration at Lahori was closed and transferred to Shikarpur on 28th March 1932.

In addition to the introduction of looms, the demonstrations in the Southern Division and Central Division introduced some 6 and 67 dobbies respectively.

61. **Cottage Sizing Set Demonstration.**—Four weaving schools have been equipped as an experiment with a cottage sizing set each, to train the students on the machine in the preparatory processes of warping and sizing by improved methods.

A separate demonstration equipped with a Sizing Set and two fly-shuttle looms was also maintained in the charge of one Head Master and one Assistant Master under the supervision and guidance of the Senior Weaving

Assistant. This is the only demonstration of its type in the Presidency and it was conducted during the year under review at Dhulia, Ahmednagar and Sangamner.

At Dhulia one Set was manufactured under the supervision and guidance of the demonstration staff and was supplied to the Hand Weaving Class of the Agricultural School there. Having finished its work at Dhulia the demonstration was removed to Ahmednagar in July 1931.

It worked at Ahmednagar till February 1932 where it was visited by some 200 weavers. During the period of 8 months of its work there, the demonstration introduced 2 sets of double the dimensions of the Department's set. One was supplied to a Hand Loom Factory owner and the other was supplied to the Lady Superintendent of the Karanji Mission.

The demonstration was then closed and transferred to Sangamner in the Ahmednagar District in March 1932 at the request of the Weavers' Association there. It has been received there with considerable enthusiasm from the beginning.

62. **Wool Weaving Demonstration.**—This demonstration is the only one of its kind in the Presidency conducted to train wool weavers, Kurubars and Dhangars in the improved and economic methods of Kambli Weaving.

During the year under review 2 further labour-saving appliances were added to the equipment of the demonstration. One is the Improved Carding Bow and the other a treddle-driven Spinning Wheel manufactured by a Calcutta firm.

The improved bow for carding gives nearly three times more production and better slivers for spinning than can be had by the primitive crude methods. It does not give any trouble to the fingers of the Carder which he generally experiences with crude methods in carding. The Bow was demonstrated and was very much appreciated by wool weavers.

The Improved Spinning Wheel is an interesting device costing Rs. 10. It is driven by a treddle so that both the hands of the spinner are free to adjust the wool thread uniformly. It gives more production than a hand-charka. A test of its utility was taken with 40 tolas of wool. The hand-charka could give in one hour 1,090 yards of wool thread from the quantity whereas the treddle-driven spinning-wheel yielded 1,988 yards of wool thread from the same quantity in one hour. The spinning work is done mostly by women and so a woman weaver was trained on the wheel with a view to encourage the adoption of the wheel amongst others. The demonstration of this machine was received with considerable enthusiasm by the wool weavers who are too conservative to adopt anything new immediately in their work.

The Wool Weaving Demonstrator was sent to the Senior Dyeing Demonstrator, Mr. D. V. Datar, for receiving training in wool dyeing by improved methods. He returned after receiving the training which added much to the importance of the demonstration as he began to teach the wool weavers dyeing of wool by modern methods.

The demonstration worked at Benchimardi, a village in the Belgaum District, in the beginning of the year and finished its work there in February 1932. It introduced there 6 fly-shuttle looms, 4 spinning-wheels and 2 carding bows. Two wool weavers were also trained in wool dyeing by improved methods by the Demonstrator.

63. The Live Stock Expert to Government was considering the question of improving the type of sheep and the quality of their wool. The wool of a few improved sheep at Athni, district Belgaum, was found difficult in spinning by the Dhangars. The Live Stock Expert, therefore, sent to this Department a small quantity of the improved wool in question and the Deputy Director of Agriculture, Southern Division, Dharwar, sent about 35 lbs. of Marino Cross-bred Wool produced on Tegu Farm for test. A test was taken at this Department's Wool Weaving Demonstration at Benchimardi. Kamblis were woven from each kind of the abovementioned wool after careful carding and spinning. One more Kambli was woven from local wool. All the three Kamblis were sent to the Live Stock Expert with the details of the test taken and suggestions for improvements. The question is under his consideration.

64. It was brought to the notice of the Department that the Karnatic Kurubar Sangh is the chief organisation representing the interests of the Kurubars of the Presidency. It was started in 1920 and has members at Dharwar, Bijapur, Belgaum and Karwar. It has so far conducted three All-Karnatic Kurubars Conferences for the cultural and economic uplift of the community. A meeting of the Kurubar community was held at Gadag in March 1932 under the auspices of the Karnatic Kurubar Sangh. It was well-attended and was presided over by Dr. R. Nagan Gouda, M.Sc., Ph.D. This Department demonstrated at the meeting carding and spinning by the improved bow and treddle-driven spinning-wheel. The activities of the wool-weaving demonstration were fully explained to the audience as to how the Department aimed at introducing improved labour-saving appliances and modern economic methods in wool weaving to enable the wool weavers to turn out larger output and better quality. The demonstration was much appreciated by the audience and two spinning-wheels and two bows were introduced as a result.

65. **Improvements in Hand Weaving Appliances.**—The Department continued during the year its work in connection with making improvements in hand-weaving appliances with a view to enable the weaver to produce marketable articles with labour-saving appliances.

(*a*) The Beam System in hand weaving to which a detailed reference was made in the Annual Report of this Department for 1929-30 under paragraph 27 is growing popular. It was first introduced in the Central Division where it met with success. Weaving schools in other divisions are also making zealous attempts to introduce the system in their division. During the year under report 17 beams were introduced at Dharangaon, 14 at Yawal and 3 at Annigeri. It is hoped to introduce this system in the Northern Division and Sind also in the near future.

(*b*) The construction of a Mechanical Dobby was a new feature of the work of the Department under this section during the year under report. The weavers of the Presidency generally use an ordinary wooden dobby of 4 to 10 levers for weaving a particular design of a sari. Such a dobby costs from Rs. 3 to Rs. 10. A new design cannot be produced by using this ordinary dobby. If a weaver desires to produce 5 designs on 5 saris, each design being different, he must possess as many dobbies as the number of designs. This is obviously beyond the reach of an ordinary weaver who has thus to content himself with the ordinary dobby or dobbies available with him for producing some commonplace designs. Thus a mechanical dobby which can produce any kind of design up to 100 weft picks admittedly appeared to be the need of the weaver.

This Department pays particular attention to the work of training weavers in producing marketable cloth with up-to-date designs. With a view, therefore, to obviate the difficulties met by the weaver as narrated above for producing different designs with one dobby, Mr. R. N. Varade, Head Master, Weaving School, Dharangaon, and Mr. S. V. Telang, Senior Weaving Assistant, considered the possibility of making such a dobby. The Head Master under the guidance of the Senior Weaving Assistant after several experiments was successful in designing a suitable dobby which was duly manufactured and is capable of producing any big design up to 100 picks.

Most of the saris in demand have designs with less than 100 picks. The dobby in question, therefore, meets the requirements of the weavers. The dobby is light, easy to handle and cheap in price. It costs Rs. 40. It is specially suitable for a weaver who owns 2 to 4 hand-looms individually as well as a factory-owner.

The dobby has so far been demonstrated to about 50 weavers and three dobbies have been introduced within a short period of a couple of months

after the dobby was completely manufactured and demonstrated. The capacity of the dobby can be raised to a maximum of 30 shaft levers and 250 picks of weft.

66. **Dyeing Demonstrations.**—Two peripatetic Dyeing Demonstrations were maintained during the year under review with a view to train dyers, printers, weavers and others interested, in the improved methods of dyeing and printing. One Demonstration was conducted in the Presidency proper and the other was run in Sind. The former worked during the year under report at Dharwar, Gadag and Ranebennur and the latter worked at Tando-Allahyar, Hala and Hyderabad.

(*a*) The Dyeing Demonstration which was working last year at Dharwar finished its work there in April 1931 and was transferred to Gadag in May 1931. During its stay at Dharwar from 1st October 1930 to 30th April 1931, 18 persons were trained in the art of dyeing by modern methods and four new dye-houses were opened. The local dyers and weavers were thoroughly convinced of the superiority in fastness, lustre and tone of the yarns dyed by modern methods.

Situated at a distance of about 33 miles from Hubli, Gadag-Betgeri is one of the most important weaving centres. Weaving industry is carried on there on an extensive scale, the chief production being bodice cloth, high class saris, uparnis and dhoties for which Betgeri is famous. Grey and dyed yarns are imported from various places like Madura, Madras, Rabkavi, Bangalore, Bombay, Ahmedabad, Sholapur, Alur and Shivapeth. Raw silk is imported from Bangalore, Calcutta and Bombay.

The Demonstration started its work first at Betgeri with Gadag as its Head Quarters. Before the opening of the demonstration dyeing of silk at Betgeri was more or less carried on by 5 to 6 dyers who had practically monopolised the trade. Similarly dyeing of cotton was also in the hands of 4 dyers. The master weavers and others had solely to depend upon these persons for their local dyeing work. Metal printing was also done by two persons but the work was far from satisfactory in the absence of improved methods. Only one man handled calico printing with aniline dyes who had received training in the art from the Senior Dyeing Demonstrator of this Department when he was working at the All-India Swadeshi Industrial Exhibition, Gadag, in 1931.

Silk being very largely used at Betgeri for saris and bodice cloth etc., silk dyeing was first taken in hand. Both professional dyers and weavers took great interest from the beginning to whom indigo and few other shades like red, green, yellow, were the only colours known. In the beginning improvements were effected in the prevalent methods of dyeing with sulphur and naphthol colours. It was found that well

water which was b ing used was hard for the dyeing processes which stood in the way of the dyers and printers. Processes for softening the water were therefore explained in detail and also demonstrated. These processes were much appreciated by the persons attending the demonstration who began to put same into practice to their best advantage. Use of the soft water produced very satisfactory shades with more lustre and less percentage of colour than was the case before. After this new shades with naphthol colours with different combinations were introduced. The processes of dyeing were so adjusted that different shades were produced by using the same colours in different combinations. This obviated the expenditure on different colours for each shade incurred by the dyers before.

Sulphur and fast indanthrene colours were then taken up and different shades resulting from them were demonstrated. Dyeing of violet, blue and blue-black was introduced. The work of the demonstration was soon popular amongst the dyers and weavers of Betgeri who took considerable interest in learning modern methods. As a result 7 new small dye-houses were opened, improvements in different directions were effected in the existing dye-houses and some 28 persons were thoroughly trained in dyeing by modern methods.

At Gadag, as compared with Betgeri, weaving is not so largely done. Modern methods of dyeing fast red, green, violet, blue, yellow and orange shades on silk were first introduced in Gadag by practical demonstrations of same and various improvements were suggested in the crude methods prevalent.

Cotton dyeing was being done only by some weavers. The rest were giving their work to some dyers of Betgeri. Dyeing of cotton by naphthol, sulphur and indanthrene colours was, therefore, demonstrated and introduced.

Metal printing was also taught to three persons who are working on their own now. Four persons received complete training in calico printing by modern methods. They have started to work independently and are receiving satisfactory amount of work from the local merchants.

At Gadag some 14 persons both dyers and weavers received complete training in silk and cotton dyeing, 5 small new dye-houses were opened under the supervision and guidance of the Demonstrator, improvements were made in the existing dye-houses by personal visits of the Demonstrator and 6 persons were trained in printing by improved methods.

The Demonstration was well attended during its stay at Gadag and in addition to the persons trained at Betgeri and Gadag as mentioned above some 36 persons from 22 different places e.g. Sarbhon, Hubli, Rabkavi, Benchimardi, Karwar, Bagalkot, Shiol, Gajendragad etc. attended

the Demonstration according to their convenience and received training in modern methods in dyeing and printing. The Demonstration finished its work at Gadag in February 1932 and was transferred to Ranebennur from March 1932.

In addition to his work as narrated above the Senior Dyeing Demonstrator attended to various enquiries from other places seeking solutions for particular shades, recipes etc. A detailed estimate for a small modern dye-house was furnished to an enquirer from Poona. A complete scheme for opening a small dyeing class for about 10 students was supplied to the Bai Avabai Framji Petit Parsee Girls Orphanage, Bandra, at the request of the Superintendent of the institution and this Department selected a suitable Dyeing Master for them.

(*b*) The Dyeing Demonstration in Sind was in the beginning of the year located at Tando-Allahyar where demonstrations in dyeing, printing, bleaching, silk-loading as well as discharge printing—white and coloured—were given to persons attending the institution. The printers of the place took considerable interest in the discharge printing as they produced "Chintzes" usually called by them "Chunni". 26 persons regularly attended the Demonstration and some 11 casually attended it with some difficulties they met in their work which were solved by the Demonstrator. After receiving thorough training at the Demonstration 4 persons opened small cloth printing concerns and are working at present independently. People from Barmer, Umerkot, Shahadadpur, Kotri, Shikarpur, Sukkur, etc. also attended the Demonstration for training and obtaining recipes for particular shades and getting their difficulties solved.

The Demonstration was then transferred to Hala in June 1931, a big weaving centre in Sind depending upon imported dyed yarns. Many dyers and weavers first showed doubts as to the usefulness of the Demonstration but when they were convinced of the merits of the improved methods with several samples dyed and tested in their presence they began to attend the institution regularly. Demonstrations were given in dyeing, printing, mercerising, bleaching of cotton, etc. by modern methods as well as bleaching and chlorination of wool and silk which aroused considerable interest amongst dyers and weavers. Modern methods of dyeing basic and mordant colours on silk and of naphthols, sulphur, Turkey red and pigment colours on cotton were very much appreciated. Some 38 persons regularly attended the Demonstration and many others came for obtaining recipes and getting their difficulties solved etc. After complete training 4 persons opened small dye-houses with a capacity of dyeing about 200 lbs. a day in all shades. Two new cloth printing concerns on small scale started to work independently. Hala dyers are now able to supply most of the dyed yarn required by the local weavers.

People from Shikarpur, Mirpur Bathero, Mirpurkhas, Karimkhan Nazamani, Khairpur Mirs etc. also attended the Demonstration casually for their requirements. The Demonstration was then transferred to Hyderabad in February 1932 where it has aroused considerable interest from the beginning.

During the short period of one month at Hyderabad the Demonstration helped a local institution in opening a dyeing and bleaching house under its supervision and guidance. One local institution met with difficulties in running its electrically-driven Aerograph machine which was lying idle due to want of technical advice and assistance. The Demonstrator helped the institution and put the machine in regular working order as a result of which the institution has started printing on commercial scale of silk saris, blouses etc. It has also placed orders for further colours and chemicals according to the advice of the Demonstrator.

The Demonstrator also helped people from Tatta, Sukkur and Husri in opening small dye-houses and cloth printing concerns. As a result of this, one dye-house was opened at Sukkur, one dyeing and one printing house came into existence at Tatta and one printing house was opened at Husri. The Demonstrator also attended to various enquiries from interested parties requiring technical advice and recipes etc. One dyer from Sukkur was furnished at his request with a sketch of a mercerising apparatus as he wanted to start mercerisation work. He got one apparatus made locally according to this sketch, which is working well at present. One dyer could not get uniform results throughout the year in Turkey-red printing. In summer he got very poor results. All his chemicals were tested but they were according to the requirements. Then the water he was using was also tested. It was found that in summer the water which he used from a pond was full of the properties of alum. Tests were taken of different waters in his presence and he was convinced of the trouble caused by the water he was using.

67. **Government Hand Weaving Institute, Poona.**—This Institute started its regular work from June 1930 with two courses of instruction, viz. Advanced and Artisan Courses.

In the Advanced Course students who have studied up to the VI Standard in English are admitted. Ordinarily 15 students are admitted each year to this Course. Preference is given to candidates connected with hand-loom weaving industry. The course of instruction in this class extends to a period of two years, in English, and consists of both theory and practice in the Technology of Weaving.

The Artisan Course is mainly intended for weavers preferably literate. The number of admission is limited to 15. The course of instruction in this class extends to one year. The training is imparted in vernacular.

Twelve scholarships of Rs. 5 to Rs. 20 per month are granted to deserving students. No fees are charged for instruction.

The Institute is equipped with various types of modern hand-looms, sizing machines and dyeing apparatus.

The first Annual Examination was held in April 1931 for which technically qualified men from outside were appointed as examiners.

Mr. J. F. Valladares, A.T.I., Deputy Head of the Textile Department, Victoria Jubilee Technical Institute, Bombay, worked as Examiner in Art Drawing and Theory and Practice of Hand Weaving. Mr. V. R. Barve, M.A., B.Sc., worked as Examiner in the Theory and Practice of Dyeing, and Mr. R. T. Sathe, Superintendent, V. J. Municipal Technical School, Poona, worked as Examiner in Machine Drawing.

Remarks of the Examiners on the work of the candidates showed that the Institute had done very useful work in its first year.

It is gratifying to note here that the first batch of students who left the Institute after passing in the Artisan Course during the year under report are according to their own reports doing well.

The Institute is doing very useful work and is growing in popularity.

68. **Miscellaneous Activities of the Weaving Section.**—In addition to running weaving schools and demonstrations the Weaving Staff rendered assistance to the public in solving their technical difficulties, etc. Some examples of work in this direction are noted below :—

(*a*) An applicant from Kolaba District required two hand-loom dobbies of the Universal type manufactured for him. He got same manufactured at the Hand Weaving Institute at his own expenditure under the supervision and guidance of the Institute staff.

(*b*) The Superintendent of the Empson Workshops and Technical School, Poona, was given all possible assistance in the setting up of looms and fancy work appliances.

(*c*) The Administrator of Jawhar State, Thana District, requested this Department to train a man from the State in hand weaving with a view to open a hand weaving class in the State under him. The man was trained at the Dharangaon Weaving School by the Head Master in preparatory processes, weaving of twill, drill, towels, dhoties, coating, shirting, saris, khadi, etc. Special instructions for design work such as karwat, bugri, ruiful, kamful on saris by dobby work were also given. The candidate returned to the State on the completion of the training and as a result the authorities ordered out two fly-shuttle looms and two dobbies, etc.

INVESTIGATIONS COVERING COTTAGE INDUSTRIES

69. **Investigation into the Condition of Hand Weavers.**—The investigation in connection with Hand Weaving Industry detailed on pages 33-34 of last year's report was carried on further during the year under report in the following centres :—

Northern Division ..	.. Broach, Surat, Chikhli, Abrama, Bhaner, Uttersanda, Alipur and Amleshwar.
Southern Division ..	.. Belgaum, Lakkundi, Gajendragad, Gadag, Hubli, Dharwar, Bhoj, Kaladgi, Kolewadi, Karajgi, Annigeri and Benchimardi.
Central Division ..	.. Sholapur, Parola, Dharangaon, Chandor, Kharda, Satana, Dhulia, Bhingar, Malegaon, Nasik, Ahmednagar, Vairag and Yawal.
Sind	.. Hala, Nasarpur, Lahori, Lakhi, Tatta and Tando-Allahyar.

Last year it was mentioned that the reduction in the wages then was chiefly due to the fact that the agriculturists who are the hand weavers' best customers did not buy as they did in normal years owing to the fall in commodity prices as well as to the continued severe competition from the mills. There was a drop in wages of hand-loom weavers continuously from 1928 to 1930. The wages decreased by 16 per cent. to 50 per cent. in 1930 as compared with the wages earned in 1927. During the year under review even the reduced wages could not be earned regularly and continuously because the merchants dealing in hand-made articles were not placing orders as in normal years. This year it was observed that the wages of weavers had registered a further drop practically everywhere. The wages in 1931 decreased by 16 per cent. to 60 per cent. as compared with the wages earned in 1927. Thus the bulk of weavers are in a very poor economic condition and help is urgently required in the directions mentioned under paragraph 65 of the last year's report. The Department is doing its best to train suitable men who may organise the hand-loom weaving industry on factory basis. The Central Hand Weaving Institute, Poona, a mention of which is made elsewhere in this report is doing very useful work in this direction. The Department also continues to help the weavers in adopting improved appliances and labour-saving devices in their work as will be seen from the foregoing paragraphs.

For help in other directions such as the training in designing and weaving of cloths which do not come in direct competition with mills, organising of small factories for sizing and supplying to weavers yarns, etc., in each of the large hand-loom weaving centres and helping them to find

markets for their finished products, the entertainment of a Textile Expert is a necessity which has been postponed only on account of the present financial stringency.

70. **Glass Bangle Making as a Cottage Industry.**—The Department of Industries made a special enquiry regarding the condition of this industry as a cottage industry during the year under report. The enquiry revealed that apart from the large organised factory at Kandivlee which employs some 500 persons and produces bangles of the approximate value of Rs. 2·5 lakhs per year, bangles are made on cottage industry basis in a number of villages in this Presidency as shown in the statement given herebelow :—

Statement showing the approximate production of bangles in the Bombay Presidency on cottage industry basis

District	Place	Approximate production of bangles in dozen pairs	Approximate value in rupees	Approximate number of persons in the industry
Thana	Chinchani-Tarapur..	50,000	8,000	80
Kaira	Kapadvanj ..	120,000	10,000	15
East Khandesh ..	Edlabad ..	37,000	2,000	10
Do. ..	Nasirabad ..	600,000	25,000	80
Poona	Talegaon-Dabhade ..	18,000	2,000	5
Dharwar	Rajpur ..	35,000	2,000	10
Belgaum	Ghodgeri ..	600,000	30,000	80
		1,460,000	79,000	280

It will be noted from the above that all the cottage workers put together produce bangles worth only about one-third of the value of the bangles produced at the Kandivlee factory. Similarly the total number of persons engaged in the industry in the various villages is considerably less than that employed by the Kandivlee factory. Same remarks apply to the total production of bangles in the villages as it is less than the total production of the Kandivlee factory.

The bangles manufactured in the various villages are very crude being uneven in thickness as well as shade of colour. Primitive appliances and processes are used in their manufacture. The value of imports of bangles from foreign countries into the Bombay Presidency alone in the year

1930-31 amounted to Rs. 32·17 lakhs and in the year under report the imports were of the value of nearly Rs. 24 lakhs.

This industry is carried on as cottage industry in other countries and there is no reason why same should not be the case in this Presidency. Bulk of the bangles used in this Presidency are still imported. There would, therefore, appear to be considerable scope for the establishment of this industry as a cottage industry. The Department, therefore, considered during the year under report the best means of encouraging this industry on cottage basis. Negotiations are at present in progress with a Glass Works in this Presidency to carry out experimental work in connection with the proper composition of glass specially suited for bangle making in villages, suitable type of furnace, rolling machine and fusing appliances, etc.

71. **Indigenous Soap Industry in Gujarat.**—Prantij and Kapadvanj have been well known for their washing soap for nearly a century. Owing to peculiar trade conditions and emigration of the soap producers of Kapadvanj to other places like Bombay the indigenous soap industry of Kapadvanj has more or less dwindled down but Prantij has kept up its position as the chief indigenous soap producing centre. Unlike the soap made at other places the soaps of Prantij and Kapadvanj are made entirely from local raw materials. The soaps produced at these places may, therefore, be called 100 per cent. Indian soaps. The industry was investigated by the Industrial Chemist during the year under report and it was found that the process used by the manufacturers is old and time-worn. There is a very good scope for improvement in the processes by the application of the laws of modern chemical science and soap technology. Soaps are manufactured at these places by boiling the locally produced Mowrah seed oil with caustic lye prepared from the natural soda and lime found in nearby villages. As the natural soda contains a considerable amount of common salt, the soap produced is almost pure grained soap containing a very high percentage of sodium salt of fatty acids. Taking into consideration the actual soap content the soaps produced at Prantij are far better and cheaper than the soaps made by most of the soap factories in this Presidency. The total value of soap annually produced by the four factories at Prantij can be safely put down at Rs. 2 lakhs or more. It has been estimated that by the proper application of the methods of modern soap technology the production can be almost doubled. Experiments to find out a suitable method for the separation of soda (sodium carbonate) from the natural soda which consists of a mixture of sodium carbonate, sodium bicarbonate, sodium chloride (common salt) and sodium sulphate are being conducted by the Industrial Chemist and proposals for assisting this cottage industry are now under consideration.

CHAPTER IV

TECHNICAL AND INDUSTRIAL EDUCATION

72. Commencing from 1st April 1931 the control of Technical and Industrial Education was transferred to the Director of Industries from the Director of Public Instruction. The work of the Department of Industries under this head, therefore, during the year under report was as follows :—

(1) Administrative control of the work of the Committee of Direction for Technical Education.

(2) Making of a fixed annual grant to the Victoria Jubilee Technical Institute and general administrative work in connection with the Institute.

(3) Administrative control of two Government institutions, viz. the R. C. Technical Institute, Ahmedabad, and the Technical School, Ahwa.

(4) Award of technical scholarships.

(5) Miscellaneous work.

73. Technical institutions in this Presidency which come under the purview of this Department may be broadly divided under the following classes :—

(1) Government aided institutions maintained by Municipalities and Local Boards.

(2) Government aided institutions maintained by private bodies.

(3) Institutions recognised by the Department of Industries.

(4) Government institutions, viz. the R. C. Technical Institute, Ahmedabad, and the Technical School, Ahwa, controlled by the Department of Industries.

There are at present in this Presidency 7 Government aided institutions maintained by public bodies, 21 Government aided private institutions, 14 private Municipal and Government institutions recognised by the Department of Industries, and 2 Government institutions under the control of the Department of Industries. A complete list is given in Appendix I hereto.

The Department of Industries carried out its functions in connection with the above institutions in the following manner.

The 2 Government institutions, namely, the R. C. Technical Institute, Ahmedabad, and the Technical School, Ahwa, are administered and controlled directly by the Department of Industries. The rest of the institutions are administered by the bodies which maintain them. The Department of Industries maintains its touch with these institutions through the agency of the Committee of Direction for Technical Education.

This Committee has under its purview all the technical institutions in this Presidency with the exception of the Victoria Jubilee Technical Institute, Bombay, and the Technical School, Ahwa. It inspects all the schools periodically, examines the candidates annually, awards to the successful candidates Certificates of Proficiency, assesses the schools for grants-in-aid and recommends them for recurring and non-recurring grants to the Director of Industries. Applications for recognition from new schools are also referred to this Committee by the Director of Industries for report before recognition is granted.

THE COMMITTEE OF DIRECTION FOR TECHNICAL EDUCATION

74. During the year under report the Committee comprised the following gentlemen :—

HUSSEINBHOY A. LALLJEE, Esq.	.. Chairman.
P.B. ADVANI, Esq., M.Sc. Tech., M.I.E., J.P.	.. Member.
W. GRIEVE, Esq., M.A., B.Sc., I.E.S.	.. Do.
A. S. TROLLIP, Esq., B.Sc.	.. Do.
L. BIGG WITHER, Esq., M.I.Mech.E., J.P.	.. Do.
Col. C. GRAHAM SMITH, O.B.E.	.. Do.
Dr. G. W. BURLEY, D.Sc., M.I.Mech.E., J.P.	.. Member and Secretary.

As pointed out in the previous paragraph, the functions of the Committee are to inspect the various technical institutions in this Presidency with the exception of the Victoria Jubilee Technical Institute, Bombay, and the Technical School, Ahwa, examine the candidates and give to the successful ones Certificates of Proficiency, to assess the schools for grants-in-aid and recommend them to the Director of Industries for recurring and non-recurring grants and entertain applications from new institutions for recognition and recommend suitable ones to the Director of Industries for recognition.

To carry out these functions the Committee maintained during the year under review a part-time Secretary, a full-time Inspector, and two part-time clerks and a peon.

75. **Inspection.**—The Teaching Inspector as usual visited various schools during the year in discharge of his duties making useful suggestions wherever necessary. The Secretary of the Committee also visited most of the schools and inspected their methods of working, accountancy records, attendance registers and general management. I myself visited 8 schools and inspected the method of their work, progress etc. during the course of my tours in the Presidency.

76. **Instruction.**—During the year under report all the schools continued to teach the subjects taught in the previous year with practically no change.

Carpentry, Carpentry drawing and Wood work technology were taught in nearly all the schools.

Mechanical Engineering taught at the R. C. Technical Institute, Ahmedabad, F. S. Parekh Technical Institute, Surat, and King Edward VII Technical School, Dhulia, was of a fairly advanced character while that at Nasik Mechanical Engineering School and the School of Industry at Ratnagiri was of an elementary nature.

Maistry class work was taught at Poona, Ahmednagar, Dhulia and Pandharpur. Typography was taught at Alibag, Ahmednagar and in the newly recognised R. C. Mission Anand Press and Industrial School at Anand.

Tailoring was taught at Borsad, Yeravda, Manmad and the newly recognised S. L. Panday Industrial School at Matheran. The tailoring work done at the Jadhav's College of Tailoring and Cutting, Poona, was found to be of a fairly advanced character.

Classes in Wiremen's work were continued at Sukkur, Surat, Ahmednagar and Poona, and during the year under review examinations were held for the first time in Wiremen's work at Dhulia and Pandharpur. These classes are now becoming very popular as electrical energy is being installed in several places and it facilitates the obtaining of the Government Second Class Wiremen's Competency Certificates.

Hand weaving was taught at the Schools at Anand, Bordi, Bombay, Ahmednagar, Alibag, Ratnagiri, Sholapur, etc., the main object of the classes being to give training to boys in this cottage industry which they can adopt as a spare time occupation when they are free from agricultural and other work.

Classes in agricultural carpentry and smithy practice were held in the schools at Palghar, Ankleshwar and Satara.

In the Municipal Technical School at Jacobabad in addition to smithy, fitting, turning etc. wood turning and lacquering work was continued. The boys find ready employment as there is a demand for turned and lacquer work in Sind.

The training given in the several schools under the control of the Committee of Direction for Technical Education appears to meet the local demands of the industries as in many cases the boys who complete the course find ready employment. The boys attending the schools are found to be extremely poor and, as such, take the first opportunity of earning money by picking up a job whenever available even though they are partially trained.

77. **Examinations.**—The annual examinations of all the schools were held by the Committee of Direction for Technical Education in the last week of March 1932. 240 candidates who were successful in the examinations held in March 1931 were awarded Certificates of Proficiency by the Committee.

78. **Grants-in-aid.**—During the year under review the Department sanctioned grants-in-aid to various Technical and Industrial Schools amounting to Rs. 43,758 as shown in Appendix I on the recommendation of the Committee of Direction for Technical Education.

In addition to the grants-in-aid made to the schools, the Department sanctioned non-recurring equipment grants amounting to Rs. 5,406 to nine schools for replacement of worn out tools and for the purchase of some additional machinery by them.

No grant-in-aid was sanctioned to the Nadiad Industrial Institute, Nadiad, during the year under review as it remained closed.

All the schools shown in Appendix I were inspected and their candidates examined by the Committee, excepting the Government Technical School, Ahwa.

79. **Recognition of Schools.**—Ten new institutions applied for recognition during the year under review of which the following seven were recognised on the recommendation of the Committee of Direction for Technical Education :—

(1) Jadhav's College of Tailoring and Cutting, Poona.

(2) Municipal Technical School, Sholapur.

(3) R. C. Mission Anand Press Industrial School, Anand.

(4) American Wesleyan Mission Industrial School, Sanjan.

(5) The S. L. Panday Industrial School, Matheran.

(6) Tablige Talim Anjuman Islam Weaving Class, Pathardi.

(7) Pandharpur Electric Supply Co.'s Wiremen's Class, Pandharpur.

The application of the Social Service Centre (for women), Naigaum, Bombay, did not fall under the purview of the Committee and the institution was not, therefore, recognised, whereas the applications from two other institutions, viz. Victoria Tailoring College, Poona, and Byramjee Jeejibhoy Industrial Home, Matunga, Bombay, are under consideration.

80. **Expenditure incurred.**—The expenditure actually incurred by the Committee during the year under report was as under :—

	Rs.	a.	p.
(1) Establishment charges	3,959	3	10
(2) Inspection charges	3,625	9	11
(3) Examination charges	8,202	11	8
Total ..	15,787	9	5

An amount of Rs. 100 was received from the Jadhav's College of Tailoring and Cutting, Poona, on account of Examination Fees charged to it for holding examination in the subjects of tailoring and cutting at Rs. 10 per examinee. This amount was credited to Government.

During the year under report proposals were submitted to Government for reduction in examination fees payable to examiners appointed by the Committee. These were accepted by Government and as a result it is anticipated that there will be a saving of about Rs. 1,500 per annum under this head of the Committee's expenditure from the year 1932-33 onwards.

At the instance of this Department the Committee agreed during the year under report that the Secretary should not receive any payment in addition to his salary for inspection of the various schools. A saving of Rs. 800 per annum is anticipated as a result of this measure.

VICTORIA JUBILEE TECHNICAL INSTITUTE, BOMBAY

81. This is the premier Technical Institute of the Presidency and is in a class by itself. It is considered to be one of the best technical institutions of its kind in India and is recognised as the Central Technological Institute in the Bombay Presidency. The standard of instruction reached is fairly high and approximates that which is required for a University Degree.

The management of the Institute is vested in a Board of Trustees of which the Chairman and 7 members including the Director of Industries are nominated by Government.

82. **Courses of Instruction.**—Regular courses of instruction covering a period of 4 years are given in (*a*) Mechanical Engineering, (*b*) Electrical Engineering, (*c*) Textile Manufacture, (*d*) Technical and Applied Chemistry and (*e*) Sanitary Engineering and Plumbing.

The popularity of the Institute may be judged from the fact that no less than 602 applications for admission were received in June 1931 and 550 of them actually appeared at the Entrance Examination. Out of the candidates successful in the Entrance Examination 201 were actually admitted to the Institute in the different courses. Students from different parts of India apply for admission and out of the total number admitted some 58 were from outside the Bombay Presidency.

The annual examination of the final session of the courses was held in February-March 1932. The results on the whole were satisfactory. 29 out of 40 passed in Mechanical Engineering, 35 out of 52 in Electrical Engineering, 15 out of 19 in Textile Manufacture, 6 out of 6 in Technical and Applied Chemistry, and 10 out of 10 in Sanitary Engineering.

The Institute authorities award diplomas to the successful candidates entitling them to use the letters L.M.E., or L.E.E., or L.T.M., or L.T.C., or L.S.E., according to the course of instruction completed by the candidate. The diploma certificates are countersigned by the Director of Industries.

Seventy-six students of the Victoria Jubilee Technical Institute also sat for the local examinations of the City and Guilds of London Institute. Out of these 37 were successful.

83. **Miscellaneous Classes.**—The Institute provides in addition to the regular courses mentioned above apprentice classes to train trades-people and artisans. The training given in these classes consists of elementary courses of instruction in Electrical Engineering, Mechanical Engineering and Textile Manufacture. All these classes are held once a week. During the year under review a good number of candidates joined each of the above classes and the results of their examinations were satisfactory.

84. **New Textile Workshop.**—The building of the new Textile Workshop was completed during the year under report and the Public Works Department handed it over to the Institute authorities for use. This Workshop is now being equipped with the necessary textile machinery

85. **Expenditure.**—The total expenditure incurred by the Institute during the year was Rs. 2,55,480 out of which Government grant given by the Department of Industries to the Institute amounted to Rs. 1,25,000.

GOVERNMENT TECHNICAL INSTITUTIONS CONTROLLED BY THE DEPARTMENT OF INDUSTRIES

86. There are 2 Technical Institutions in the Bombay Presidency maintained by Government and administered directly by the Department of Industries. These are the R. C. Technical Institute, Ahmedabad, and the Technical School, Ahwa.

87. **R. C. Technical Institute.**—While the standard of instruction attained in this institution is lower than that at the Victoria Jubilee Technical Institute, Bombay, it is higher than that attained at the other Technical Schools in the Presidency. Candidates who are above 15 years of age and have completed at least Anglo-Vernacular Standard V are eligible for admission. Instruction covering a period of 3 years is provided in (1) Cotton spinning, (2) Cotton weaving, and (3) Mechanical Engineering. An entrance examination is held every year in June for selection of suitable candidates. During the year under review, 208 applications were received for admission to the Institute. 100 candidates actually appeared at the Entrance Examination and 68 were admitted to the Institute. Out of these 20 were admitted to the Cotton Spinning Course, 20 to the Cotton Weaving Course and 28 to the Mechanical Engineering Course. The total number of students during the year was 132 which is higher than in the last 2 years, viz. 118 in 1929-30 and 119 in 1930-31.

During the year under report an additional subject on " Steam and Heat Engines " was introduced in the III year Textile Classes.

Subjects like Carpentry in the I year Textile Course and Fitting in the II and III year Textile Classes were made compulsory for examinations. Similarly the subject of practical Mathematics was introduced in the I year Textile and Mechanical Engineering Classes.

Various scholarships founded by the public were as usual granted to suitable students. In addition to these, 6 Government scholarships of Rs. 10 per month each were also awarded to deserving students.

The Annual Examination for 1930-31 of all the Classes of the Institute was held by the Committee of Direction for Technical Education, Bombay, in April 1931. 114 students appeared in the examination and 99 passed bringing the result to 86·8 against 80·4 in the previous year. It is gratifying to note that in the Final Year Examination 8 out of 8 in cotton spinning, 6 out of 6 in cotton weaving and 15 out of 16 in Mechanical Engineering passed out.

Fourteen students of the Institute also appeared in the City and Guilds of London Institute Examination in the various Grades for different subjects of which 8 passed out against 8 out of 17 in the previous year.

The results of the Institute Examinations for 1930-31 were thus satisfactory. Examinations for 1931-32 were held in April 1932.

The Institute is becoming more and more popular. Though the minimum qualifications for admission are fixed to be Anglo-Vernacular Standard V, some Matriculates and F.Y.A. passed students are also attracted to the Institute.

Expenditure.—The total expenditure incurred during the year was Rs. 30,820. Receipts were Rs. 7,148. Therefore, the net expenditure was Rs. 23,672.

88. **The Government Technical School, Ahwa.**—This school is maintained to train the Dangs Tribes in various cottage industries with a view to enable them to earn a living rather than wander about in forests. Attention is also paid to turning out efficient mechanics who can fill suitable posts in building and smithy work in Dangs.

Candidates are required to have passed the Vernacular Standard IV for admission. Exceptions are, however, made in cases of uneducated Dangis anxious to take up some special course on the recommendation of the Assistant Political Agent, Dangs.

The subjects specially taught are carpentry and smithy. The pupils are divided into two classes—(*a*) whole-time and (*b*) part-time. The part-time students attend the school for two hours a day after finishing their work in Primary Vernacular Schools. Two instructors are maintained to carry on the work of the school.

During the year under review there were 13 students in the school 10 of whom were part-time. 4 students were from the Aboriginal and Hill

Tribes. Small scholarships in the form of daily wages were granted to students during the year. The carpentry course covers a period of 3 years whereas smithy course lasts for two years.

The Annual Examination for 1930-31 was held in April 1931. Two students appeared in the Final Examination and passed out. They are now employed in the Forest Department. Out of the remaining 11 students in the other classes 9 passed out. The results were thus satisfactory.

The Annual Examination of the School for 1931-32 was held on 15th April 1932.

The school is getting popular now. It has been in existence for the last seven years. The students trained in carpentry are reported to be doing good work after leaving the school. The carpentry class gets orders for repairs to furniture as well as new furniture and the school fills the need of Dangs in training Backward and Aboriginal and Hill Tribes boys in cottage industries.

Expenditure.—The total expenditure incurred during the year was Rs. 1,750.

SCHOLARSHIPS

89. The Department of Industries annually awards the below-noted scholarships tenable at the Institutes mentioned against them :—

(1) 11 scholarships	.. Victoria Jubilee Technical Institute, Matunga, Bombay.
(2) 6 do.	.. R. C. Technical Institute, Ahmedabad.
(3) 2 do.	.. F. S. Parekh Technical Institute, Surat.
(4) 12 scholarships	.. Hand Weaving Institute, Poona.
(5) 3 do.	.. Research Scholarships in Technical Chemistry tenable either at Indian Institute of Science, Bangalore, or Royal Institute of Science, Bombay.
(6) 2 do.	.. Scholarships in Electrical Engineering for training in the Workshops of the G. I. P. Railway, the Bombay Electric Supply and Tramways Co. Ltd. or Messrs. Tata Sons Ltd.

In addition to these scholarships suitable small scholarships by way of encouragement are awarded to the students of the Technical School at Ahwa and the students of the peripatetic weaving schools in the Presidency proper and Sind reviewed in Chapter III.

There is nothing of importance to report in regard to scholarships under (2) to (4). As regards items (1), (5) and (6), these are reviewed in the succeeding paragraphs.

90. **Scholarships tenable at the Victoria Jubilee Technical Institute, Bombay.**—With a view to encourage the students of the Intermediate, Backward and Depressed Classes and Muhammadans, Government have provided for a set of Special Scholarships of Rs. 35 per month for such students tenable at the Victoria Jubilee Technical Institute, Bombay, for the full course of 4 years. Applications for these scholarships are considered by the Director of Industries as per rules laid down by Government for their award which are printed in the Government Gazette every year and supplied to all the recognised High Schools in the Presidency. The scholarships in question are as under :—

(*a*) 5 scholarships of Rs. 35 per month each to be awarded each year to the students of the Intermediate Classes of the Hindus for the full course of 4 years at the Victoria Jubilee Technical Institute, Bombay.

(*b*) 3 scholarships of Rs. 35 per month each to be awarded each year to the students of the Backward Classes (including Depressed Classes) for the full course of 4 years at the Victoria Jubilee Technical Institute, Bombay.

(*c*) 3 scholarships of Rs. 35 per month each to be awarded each year to Muhammadan candidates for the full course of 4 years at the Victoria Jubilee Technical Institute, Bombay.

During the year under review the Department received 14 applications for consideration of which 8 were from the Intermediate Hindus, 4 from the Backward Classes and only one from a Muhammadan candidate. The applications were considered in accordance with the rules for award of the scholarships and awards were made as under :—

Intermediate Classes.—Three students in the Electrical Engineering Course, one in Textile Manufacture and one in Mechanical Engineering received the scholarships for this Class.

Backward Classes.—Two in Mechanical Engineering and one in Electrical Engineering were granted scholarships.

Muhammadans.—There being only one candidate he got the scholarship in the Textile Manufacturing Course.

91. **Technical Chemistry Scholarships.**—As a measure of retrenchment in expenditure only two scholarships for research work in Technical Chemistry were sanctioned by Government; the third scholarship was held in abeyance.

92. **Work of the Chemistry scholars at the Indian Institute of Science, Bangalore.**—One of the scholars at the Indian Institute of Science whose scholarship was extended for another year continued to work on the synthesis of Cantharidin.

93. **Work of the Chemistry scholars at the Royal Institute of Science, Bombay.**—Since last year the scholars of this Department working at the Royal Institute of Science are working under the direct guidance and supervision of the Industrial Chemist of this Department on various problems pertaining to various industries.

One of them worked on the extraction of cellulose material from rice straw. Cellulose has been extracted under various conditions of temperature, pressure and alkali concentration. The various samples of cellulose or pulp thus obtained have been examined under microscope. Suitable samples will be sent to the paper mill at Poona to be converted into paper for testing purposes.

Another scholar worked on the hydrogenation of oils. Several Indian vegetable oils have been hydrogenated singly or in mixture under various conditions of temperature and catalyst concentration to obtain a suitable sample that will possess more or less the same chemical and physical properties as the imported animal tallow for textile mills. The work is progressing.

Both these scholars will submit their thesis for the M.Sc. degree of the University of Bombay in June 1932.

A third scholar who was given a scholarship during the year under report worked on extraction of strychnine from Nux Vomica.

These three scholars at the Royal Institute of Science were occasionally also given small minor problems for investigation that came up before the Department from time to time. During the year under review the scholars were put on work on (*a*) moisture content of cigarette tobacco, (*b*) testing of writing inks, (*c*) purification of fish oil, (*d*) composition of Japanese tooth powder, (*e*) sugar content in jaggery, and (*f*) suitable denaturants for alcohol for soap industry, etc.

94. **Scholarships in Electrical Engineering.**—In this branch of training only one scholarship for practical training in Electrical Engineering was awarded during the year under report. The other scholarship was held in abeyance as a measure of retrenchment in expenditure. The scholar joined the B. B. &. C. I. Railway Electrical Workshops.

The two scholarships granted in 1930 were terminated during the year as they were awarded for one year only.

During the year under report Government were pleased to pass orders recognising the training given in the workshops of the Bombay Electric Supply and Tramways Company Limited.

The arrangement with the B. B. &. C. I. Railway Co., which had hitherto admitted the scholars of the Department for training in their Electrical shops, came to an end during the year under report as the Company declined to take the apprentices under the existing conditions. Future scholars will not, therefore, be sent to this Railway for training.

95. **State Technical Scholarships tenable abroad.**—No new State Scholarship tenable abroad was awarded during the year under review.

A reference was made in paragraph 39 of the Annual Report of this Department for the year 1929-30 that a scholarship was awarded in 1929 to Mr. R. N. Bankapur for the study of Textile Manufacture in the College of Technology, Manchester. The scholar is reported to be working steadily and is expected to obtain the degree of B.Sc. Tech. in Textile Manufacture in July 1932. In order to enable him to have practical training after he obtained the degree it has been decided to extend the period of his scholarship by five months.

MISCELLANEOUS WORK

96. **Facilities for Practical Training etc.**—A number of requests was received from students for advice and help. Students who wanted information about Technical Institutions abroad were referred to the University Bureau. The necessary advice about technical courses in India was given in a number of cases. Arrangements were also made in a few cases for facilities for practical training in India.

97. **Industrial and Scientific Research—1931-32.**—A summary of the progress of scientific and industrial research during 1931-32 was sent to the Government of India for inclusion in the Annual Report of the Committee of the Privy Council for Scientific and Industrial Research, London. The information for the summary was furnished by some of the educational and scientific institutions in this Presidency.

CHAPTER V

WORK OF THE DEPARTMENT—MISCELLANEOUS

98. In the previous chapters the work of the Department in connection with organised industries, cottage industries and Technical and Industrial Education has been dealt with. The Department does quite an appreciable amount of work which cannot be properly included under any of the above heads, and yet is of sufficient importance to be noted in the Annual Report. Work of this nature is, therefore, referred to in the present chapter.

WORK FOR OTHER DEPARTMENTS OF GOVERNMENT

99. (*a*) The Industrial Chemical Works situated at Kirloskarwadi manufacture Formaldehyde from Methanol imported from Bhadravati Iron Works, Mysore State. In the beginning of January 1932 the local Excise Officers visited the factory at Kirloskarwadi and sealed it and thus stopped further manufacture of the chemical in question. The Proprietors of the factory made an application to the Commissioner of Excise through this Department requesting that they may be allowed to re-open the factory

immediately. The Commissioner of Excise consulted this Department on various points in connection with this case and the Department gave to him the necessary information. The Department also recommended to him that as Methanol and Formaldehyde could never be rendered fit for potable purposes by any of the processes such as dilution, distillation, precipitation, etc., chemically pure Methanol should be allowed to be used for industrial purposes without excise control. If this is not possible, then it should be treated as denatured spirit for excise purposes. The Commissioner of Excise has since allowed the factory to continue its operations.

(*b*) Special denaturants with their specifications were recommended to the Commissioner of Excise for making available to the Soap Industry specially denatured spirit suitable for that industry duty-free.

(*c*) The Chief Conservator of Forests, Bombay Presidency, Poona, requested this Department to make a report on the uses to which oils and oilcakes derived from the flowers and fruits of trees in the Bombay forests were put. Detailed information was supplied.

(*d*) The Superintendent, Government Printing and Stationery, Bombay, forwarded to this office three samples of ink of Indian manufacture for analysis and report so that he may be able to decide whether it would be advisable to go in for inks of indigenous manufacture in the place of foreign inks for supply to Government offices. The inks were tested for their constituents, for nib corrosion and under various conditions of exposure to both direct sunlight and diffused light. A detailed report covering the observations made by the Industrial Chemist in the course of tests was forwarded to the Superintendent.

(*e*) The Superintendent, Government Printing and Stationery, forwarded two penknives manufactured by the Jail Department for trial and report as to the suitability of the knives for the use of the office clerks. The penknives were tried in this Department and it was found that the article can be suitably used for office purposes.

(*f*) The Superintendent, Government Printing and Stationery, forwarded to this office a sample of white drill cloth received by him from the contractor with a view to ascertain whether it was exactly equal to the sample approved by him in all respects. Both the samples were analysed and the Superintendent was informed that the cloth supplied by the contractor was not exactly according to the sample but rather inferior.

(*g*) The work of carrying out a surprise check of the articles in stock at the office of the Superintendent, Government Printing and Stationery, Bombay, with the sealed samples was entrusted to this Department, *vide* Government Resolution, Revenue Department, No. 7662, dated the 30th April 1930. This work was carried out for the first time during the year under review. The articles in stock were checked with the sealed samples

received in this office from the Superintendent, Government Printing and Stationery, Bombay, and a detailed report was submitted to Government.

(*h*) An enquiry was received from the Director General of Commercial Intelligence and Statistics, Calcutta, on behalf of a Polish firm who had approached the Indian Trade Commissioner at Hamburg for settlement of their claim against a Bombay firm. The party concerned was interviewed and the firm agreed to settle the claim of the Polish firm. The latter firm is, however, not inclined to accept the settlement as offered by the Bombay firm. The matter is therefore at present under further investigation.

ACTS, LEGISLATIVE MEASURES, ETC.

100. This Department was requested to give its opinion on the following measures :—

(1) A Bill further to amend the Workmen's Compensation Act, 1923.

(2) Extension of Workmen's Compensation Act to workers in agriculture and forestry.

(3) Employer's liability under the Workmen's Compensation Act.

The above measures are designed to give effect to the recommendations made by the Royal Commission on Labour in India in Chapter XVI of their Report.

MISCELLANEOUS ACTIVITIES OF THE DIRECTOR OF INDUSTRIES AND THE TECHNICAL STAFF

101. During the year under review the Director was a member of the following bodies :—

The Board of Trustees of the Prince of Wales Museum.

Advisory Committee of the Royal Institute of Science.

The Board of Management of the Victoria Jubilee Technical Institute.

The Committee of Direction for Technical Education.

The Bombay Smoke Nuisances Commission.

The Director attended altogether 27 meetings of these bodies during the year.

The Director was appointed Ordinary Fellow of the University of Bombay and was elected as a member of the Board of Studies in Engineering.

The Board of Studies in Chemistry of the University of Bombay invited the Industrial Chemist to work on a Committee to frame two-year Diploma Courses for technical training in—

(1) Dyeing and bleaching and finishing.

(2) Soap Technology.

(3) Technology of oils, paints and varnishes.

EXHIBITIONS

102. It is the policy of the Department to participate in the Presidency and District Industrial and Agricultural Shows by deputing its Weaving Section Staff with a view to demonstrate improved methods in hand weaving, hand sizing, dyeing and calico printing as may be necessary at a particular Show or Exhibition.

LIBRARY

103. A library is attached to the Department of Industries which contains 3,412 books. During the year 244 publications were added to the library. The library is being gradually added to, so as to increase its usefulness to the Department and the public interested in Industries. Many important technical journals are also regularly received in the Department.

The library is open for reference to the general public at any time during office hours on working days. It is gratifying to note that members of the public are taking full advantage of this arrangement.

CHAPTER VI

CONCLUSION

STAFF

104. I held charge of the office of Director of Industries for the whole year. Mr. M. E. Haskell held the post of Industrial Engineer for the whole year except for one month when he was on leave. Dr. M. S. Patel continued to work as Industrial Chemist. Mr. B. Tayabali worked as the Principal of the R. C. Technical Institute, Ahmedabad, during the year under report. The other staff of the Department was the same as mentioned in the report for the year 1929-30. By the transfer of Technical and Industrial Education to this Department the staff of the R. C. Technical Institute, Ahmedabad, and Technical School at Ahwa came under the control of this Department.

TOURING

105. During the year I was out of my headquarters for 29 days and visited the following places :—Sholapur, Poona, Broach, Surat, Vedcha, Navsari, Talegaon, Nasik, Yawal, Manmad and Ahmednagar.

My visits to the different places were in connection with the inspection of weaving schools and demonstrations and technical institutions and inspection of the industries existing there.

The Industrial Engineer was out of headquarters for 104 days and visited Surat and Poona in connection with the investigation of improvements in gold and silver thread industry and demonstration of the improved gold thread machine.

Similarly the Industrial Chemist was out of headquarters for 30 days. He visited Poona, Ghogha, Ahmedabad, Dahanu Road, Shivrajpur, Kapadvanj, Navsari and Tarapur. His visits to these places were in

connection with paper industry, natural gas, making of tallow substitute, peppermint oil, kaolinised rock, natural soda and oil and glass industries.

VISITS TO WORKS

106. The Director and the two officers mentioned above visited 47 concerns in connection with the investigations in hand and rendering of technical advice etc. In addition to this the Industrial Engineer visited a large number of gold and silver thread works in Surat, Poona and Bombay.

EXPENDITURE

107. The expenditure incurred by the Department of Industries during the financial year 1931-32 and the three preceding years was as follows :—

		Rs.
1928-29	.. .. ..	77,669
1929-30	.. .. ..	1,05,924
1930-31	.. .. ..	1,23,715
1931-32	.. .. ..	3,67,019

During the year under review the control of Technical and Industrial Education and the budget grants for it were transferred from the Department of Public Instruction to the Department of Industries and the expenditure incurred under this heading was Rs. 2,46,322. The receipts under this head were Rs. 7,148 and other receipts were Rs. 4,158. The total net expenditure of the Department inclusive of Technical Education during 1931-32 was, therefore, Rs. 3,55,713.

CONCLUSION

108. Owing to lack of funds no new activity such as practical demonstrations in connection with village tanning industry, opening of additional weaving demonstrations for agriculturists etc. mentioned in paragraph 89 of last year's report could be undertaken during the year.

During the year under review the Retrenchment Committee, appointed by Government, sat and submitted its reports. Paragraph 38 of the Committee's Final Report covering the Department of Industries reads as follows :—

> " It has been made clear to us that the grants to this Department are so small that any further reduction would make it difficult to carry on work. The question then is whether it should be abolished or retained as it is. We have heard the Director of Industries and the Secretary, General Department. The majority of us are in favour of retaining the Department. Even with the attenuated grants at his disposal the Director has been able to give useful assistance to minor industries ; and we are convinced that it is desirable to retain the nucleus of a Department in being."

Government were pleased to accept the above recommendation of the Committee.

P. B. ADVANI,
Director of Industries.

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APPENDIX I

Recognised Technical and Industrial Schools in the Bombay Presidency

	Grant paid in 1931-32	
	Grant (Recurring)	Equipment Grant (Non-recurring)
	Rs.	Rs. a.
(1) Schools run by Local Bodies receiving grant-in-aid from the Department of Industries		
1 Municipal Technical School, Jacobabad	1,820	..
2 F. S. Parekh Technical Institute, Surat	6,000	1,855 8
3 V. J. Municipal Technical School, Poona	2,032	962 0
4 Local Board Industrial School, Satara	1,282	..
5 Robertson School of Industry, Pandharpur	930	..
6 Edward VII Technical School, Dhulia	4,037	1,404 0
7 School of Industry, Ratnagiri	6,915	..
(2) Schools managed by Private Bodies receiving grant-in-aid from the Department of Industries		
8 V. J. Technical Institute, Sukkur	2,213	392 8
9 Nadiad Industrial Institute, Nadiad	..	..
10 Salvation Army Boys Weaving School, Anand	495	101 0
11 I. P. Mission Industrial School, Borsad	1,232	..
12 Vocational Training School, Ankleshwar	872	31 14
13 Mahajan Home Industrial School, Surat	960	..
14 A. R. Soonawala Industrial School, Bordi	764	..
15 C. B. Mission Boys Industrial School, Palghar	466	..
16 Empson Workshops and Technical School, Poona	1,076	86 0
17 Sir D. M. Petit Industrial School, Sirur	1,169	..
18 S. P. G. Mission Industrial School, Ahmednagar	1,846	480 0
19 Sir D. M. Petit Industrial School, Ahmednagar	916	..
20 S. A. Boys Industrial School, Ahmednagar	646	..
21 St. Barnabas' Industrial School, Manmad	1,304	..
22 Mechanical Engineering School, Nasik	810	..
23 K. E. S. Topiwala Industrial School, Alibag	1,763	..
24 American Mission School for the Blind, Bombay	985	..
25 D. C. Mission Industrial School, Bombay	575	..
26 Textile Technical School, Parel, Bombay	840	..
27 S. A. Willingdon Boys' Home, Bombay	950	93 8
28 D. N. Poor Boys Seminary Industrial School, Bombay	880	..
	43,758	5,406 6
(3) Recognised Schools		
(a) Schools managed by Local Bodies not receiving grant-in-aid but recognised by the Department of Industries		
29 Municipal Technical School, Sholapur.		

(b) Schools managed by Private Bodies not receiving grant-in-aid but recognised by the Department of Industries

30 Anath Vidyarthi Griha Industrial School, Ahmednagar.

31 Jadhav's College of Tailoring and Cutting, Poona.

32 R. C. Mission Anand Press Industrial School, Anand.

33 American Wesleyan Mission Industrial School, Sanjan.

34 The S. L. Panday Industrial School, Matheran.

35 Tablige Talim Anjuman Islam Weaving Class, Pathardi.

36 Pandharpur Electric Supply Co.'s Wiremen's Class, Pandharpur.

(c) Government Reformatory and Settlement Schools not receiving grant-in-aid from the Department of Industries but recognised by the Department

37 Yeravda Reformatory School, Yeravda.

38 David Sassoon Industrial and Reformatory Institute, Bombay.

39 Industrial Settlement School, Sholapur.

40 Industrial Settlement School, Bijapur.

41 Industrial Settlement School, Hubli.

42 Industrial Settlement School, Gadag.

(4) Government Technical Schools directly controlled by the Director of Industries, Bombay

43 The R. C. Technical Institute, Ahmedabad.

44 The Government Technical School, Ahwa, Dangs.

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GOVERNMENT OF BOMBAY.

GENERAL DEPARTMENT.

Resolution No. P. 73.

Bombay Castle, 1st September 1932.

Letter from the Director of Industries, No. I.C. 20/4802, dated the 20th August 1932.

RESOLUTION.—The thanks of Government are due to Mr. P. B. Advani, Director of Industries, for his interesting and instructive report on the work of his Department during the year 1931-32. His detailed review of the industrial position of the Presidency and his comments on the prospects of new industries have been read with interest.

2. It is a matter for satisfaction that the Department has not only rendered help to existing industries in improving the quality and quantity of their products by practical investigations and experiments, but has also been able to explore by practical experiments certain possible new lines of industrial development. The Department has also helped industrialists by preparing estimates, solving the practical difficulties and furnishing technical advice. The extent to which the public take advantage of this help can be gauged from the fact that about 64 enquiries were received by the Department in connection with the estimates for certain small industries prepared by it last year ; and nearly thirty references were made to it in connection with practical difficulties in the processes of manufacture and with technical advice ; and two hundred eighty communications were addressed to it asking for information about trade, statistics, names of dealers, manufacturers, firms, etc.

3. The Department has rendered benefit to the gold thread industry by devising a new machine which has improved the quality of the gold thread. New machines have also been devised for the improvement of other processes. All these machines are being demonstrated in the principal centres of the industry.

4. Government attach great importance to the support and growth of cottage industries and it is satisfactory that the Industries Department has again concentrated its attention chiefly on Hand-weaving which is the most important cottage industry of this Presidency. The Department continued its propaganda in connection with improved hand-weaving appliances and with modern methods in cotton-weaving, wool-weaving, cottage sizing and dyeing, printing, bleaching, silk-leading, etc., in the several weaving

centres spread over the Presidency. Schools are being conducted by the Department, both for *bona fide* weavers and for agriculturists, and small scholarships are given for exemplary attendance and excellent work. It is gratifying to note that these schools are proving popular and that the students after completion of the course usually set up their own looms and start work themselves. The Government Hand-Weaving Institute, Poona, which has been established for teaching advanced and artisan courses to educated students is also doing useful work.

5. The efforts which are being made by the Department for the improvement of the Glass Bangle Industry and of the indigenous Soap Industry in Gujarat, for refining of sardine oil and indigenous Natural Soda, for the preparation of Tallow Substitute and Straw Boards and for the manufacture of Essential Oils deserve notice. On the whole Government are satisfied that with its limited resources the Department is rendering a good account of itself.

By order of the Government of Bombay
(Transferred Departments),

R. B. EWBANK,
Secretary to Government.

To

The Commissioner in Sind,
The Commissioners of Divisions,
The Commissioner of Excise, Bombay,
The Director of Industries,
The Collector of Bombay,
The Collector of Salt Revenue,
The Collector of Customs and Shipping Master, Karachi,
All Collectors, including the Deputy Commissioner, Upper Sind Frontier,
The Director of Agriculture,
The Registrar, Co-operative Societies,
The Chief Conservator of Forests, Bombay Presidency,
The Conservator of Forests, Northern Circle,
The Conservator of Forests, Central Circle,
The Conservator of Forests, Southern Circle,
The Conservator of Forests, Sind Circle,
The Superintendent, Government Printing and Stationery, Bombay,
The Manager, Government Central Press,
The Accountant General,
The Director of Public Instruction,
The Director of Information and Labour Intelligence (with copies of the Report for the Editors' Tables and Editors of Newspapers),
The Compiler, General Administration Report,
The Oriental Translator to Government,
The Private Secretary to His Excellency the Governor,

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Government of Maharashtra
on 20 July, 2017

The Revenue Department,
The Educational Department,
The Public Works Department,
The Finance Department,
The Home Department,
*The Chamber of Commerce, Bombay,
*The Chamber of Commerce, Karachi,
*The Indian Merchants' Chamber, Bombay,
*The Millowners' Association, Bombay,
*The Millowners' Association, Ahmedabad,
*The Bombay Piecegoods Merchants' Association, Bombay,
*The Bombay Presidency Trade Association,
*The Grain Merchants' Association, Bombay,
*The Bombay Underwriters' Association,
*The Indian Merchants' Association, Karachi,
*The Indian Chamber of Commerce in Great Britain, London,
*The Karnatak Chamber of Commerce, Bagalkot,
*The Government of India.

*By letter.